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MR. ABERNETHY'S

PHYSIOLOGICAL, PATHOLOGICAL, AND SURGICAL OBSERVATIONS;

DELIVERED IN THE

ANATOMICAL COURSE OF LECTURES

At St. Bartholomew's Hospital.

On the Physiology of the Muscular System.

As to the structure of the muscular and nervous system, those parts must be spoken of, because the physiology of the Course would be incomplete without it.

With regard to muscles, what we know of the *structure* of muscles is, that their ultimate structure is like the larger structure. The only question is, whether their threads are continued from end to end of the muscle? For my own part, I do not believe it. What a curious thing it would be if we could see a muscular fibre of the whole length of the human *sartorius!* Well, but muscles are *vascular*; they are liberally supplied with nerves, and that's all.

Function.—But their function—is their function not amazing? Is it not amazing that a little part of the flesh, such as may be found in the arm, would be torn by a few pounds weight hung to it in the dead body, and yet that it should be capable of lifting up and sustaining some hundreds of pounds? The question is, in what is that power? Is it in the fleshy structure itself? Even the flesh is easily lacerated when in the living subject. Has no one of you known of the finger of a person being torn off in a mill, the whole of it being lacerated and taken away? I have known many such instances myself. Now as to the *power* of the muscle; some persons say it is a chemical change that takes place, and some say it's a peculiar property of the muscle to contract; but all this I hold to be downright nonsense. I shall declare my opinion to you to be, and which is just John Hunter's, that *life* is something superadded to the visible structure of bodies, that it builds up the structures; that it is something superadded to it, and that it produces its peculiar phenomena, the vital phenomena, in the structure in which it appears. That it is something super-added to the structure, as *magnetism* is to *iron*, or as electricity may be to the different bodies on which it is to act. As magnetism is to iron: iron is iron, but let magnetism be added to it, and the particles of iron will contract immediately. Pith-balls are pith-balls, and if placed on the floor will never stir; but let them be on the floor when magnetism is there, and they will dance the hay and frisk about in every corner of the room. O, the most sturdy of those gentlemen whom I have known to deny this doctrine were obliged to admit, that there was a subtile kind of fluid engaged in producing divers fine phenomena. I say that that admission was made by the most sturdy champion I ever heard of in denying that electricity was something distinct, and something superadded to visible objects. But how this could be doubted, how it could be questioned that there was some subtile fluid permeating all nature and producing change, is to me quite astonishing.—Well then, I think we may believe that there is some vital energy inherent in the muscles; and I say the action of them is very like the action of electricity on other objects: and that's all I need say on the subject.

On the Physiology of the Nervous System.

From one sort of blood circulated throughout the body, is not only such a variety of structure prepared, as we find to exist in the body; but those structures are endowed, according to nature, with a vitality which qualifies them for their functions.

I spoke of muscles, and now I go to speak of *nerves*.

Structure.—What do we know of the structure of nerves? Next to nothing. Ultimately, the body of nerves is fibrous. Atoms of matter are laid down, according to some arrangement; and those atoms so laid down, cohere and form fibres. I say there can be

no question but that the body must be either fibrous, laminous, or concrete. It's the first sentence in Haller's physiology. I don't undertake to explain this just now, for I have talked of it before; but if you use your eyes, you see nothing but fibres, or plates of this arrangement. It is fair to suppose that the ultimate arrangement may be similar to the visible arrangement. What do they say about the fibres? That they are an ultimate mass. And what do they say about nerves? That they are fibrous. Fontana calls them *waving cylinders*; they are transparent, and are surrounded by vascular matter, as that which surrounds the brain; they are again surrounded by a grosser protecting membrane, analogous to the dura mater. Well, then, when a nerve is divided, how does it appear? Are the fibres blended together in the nerve? No, every one of them appears to be distinct, and every nervous fibre has a communication with its origin, either directly in the brain, or in the *medulla spinalis*, save and except where a *ganglion* is formed in the nerves. No one, I apprehend, can unravel a ganglion; the fibres are either blended together there, or are inexplicably interwoven. And when there is a plexus of nerves, then there is a great complication. Bating those things, it is very possible to take a nerve from the toe, to follow it according to its thread, and to trace it to its very origin in the medulla spinalis, or in the brain. All this is but very little knowledge, but very little knowledge indeed, and perfectly insufficient to enable you to account for the functions of the organs—perfectly insufficient. It is most marvellous, no doubt, the celerity with which vital actions are propagated through the nerves. The first proposition, and it was a perplexing proposition indeed, with regard to the physiology of the nervous system is, that every thing is felt in the brain, and that volition proceeds from that organ. To persuade a man, that when he felt this piece of chalk, for instance, the perception was in his brain, was a very difficult matter. But if the nerves of his arm were divided, no sensation was imparted by the contact of the substance of the hand; neither, if the nerves were divided, could any will be conveyed to the muscles.

Well, now, all this part of physiology, you know, is no longer to be argued upon; it is proved by direct experiment. It is proved that the nerves are of two kinds, such as communicate transmitted pressure to the brain productive of sensation, and such as transmit volition to the nerves. The experiments to which I allude, are those of Magendie. Magendie slits up the *theca vertebralis*. By frequent practice, he has got a handiness in performing operations on living animals. He will take them, when their bones are soft, and lay the theca vertebralia bare from end to end. Immediately afterwards, a fluid will form in the theca vertebralis, and there is a distention of the theca vertebralis. He slits open the theca vertebralis. He will then divide the nerves that come from the posterior pillars of the medulla spinalis, and thus he deprives the animal of sensation. The animal will move about, but you may burn him, or do any thing with him you like, but he won't feel it. You may hack and cut him as you please, still he won't feel it. And contrariwise, if you divide the front nerves, all voluntary motions are put a stop to, but feeling remains. O now, you know that a great deal of argument is rendered unnecessary, because it is acknowledged that the *brain* is the organ by which we possess both feeling and volition—feeling and all its consequent faculties. And I say it is most wonderful, the celerity with which this is done: I put it thus—a man might be standing by the fire, and have a cloth shoe on his foot: suppose, also, that there was a bucket of water standing by the side of him, and that a hot coal fell upon his cloth shoe, and set it on fire; in an instant he plunges his foot into the water; it's done as quick as thought; and yet in that space of time an intimation must be given to him that his foot is burning from the shoe being on fire, and a direction to the muscles to act. Now how can you suppose that this can be done? I say, and say again, that Haller's notion of there being a subtile fluid inherent in the nerves, was a very sensible notion according to his time. He says, there must be some subtile fluid in them, for you cannot suppose that volition is propagated throughout the whole of the nerves with this celerity. But we are at no loss, according to the philosophy of this time, to know how it happens. There is something prompt to move, in consequence of external impressions made upon nerves, or internal volition excited. There is a distinct set of chords for the conveyance of sensation, and another distinct set of chords for the conveyance of volition. All this you must admit; and you may speculate on it as much as you please, but I say this is a proof to me, that there is some subtile fluid mixed up with the frame, capable of acting with amazing celerity, and in a manner capable of adapting parts for their different structures. It is not the impression—and that was the old physiology—that is propagated along the nerves, there must be vital action induced. But temporary suspension of actions occurs both in the muscles and in the nerves; both go to sleep and recruit themselves. A man may sleep with his eyes open, and a friend comes into the room with a lighted candle in his hand; the object

of that friend, and his candle too, are both impressed on the *retina*—both depicted on the retina, but the sleeper sees them not. His "eye is open, but its sense is shut;" rouse the slumberer, put him into a state in which the actions of the nerves and muscles will take place, and he will immediately exclaim—God bless me, what are you doing here? what are you doing here, at this time o' night? Well, I say it is vital action; and Dr. Darwin has shown how those vital actions occur, and how perceptions take place without visible objects being before you—I mean the vital actions of the retina. You know that a man sees a *ghost*; why, now, to suppose that a ghost was a palpable thing—that it was as sensible to feeling as to sight, is to suppose a downright absurdity; but still people may see objects before them which are not before them, and may hear sounds which do not exist. You must consider the subject for yourselves; and I believe, if you do consider the subject for yourselves, you will be as confident as I am, that vital actions must take place in order to affect the brain and produce perception; and that the whole must operate upon the vital actions, so as to cause the motions of the obedient muscles.

I say, the physiology of the nervous system, the physiology of secretion, the physiology of muscular action—all tend to convince my mind that Mr. Hunter's notions of life are true, and that there is some subtile material invisibly commixed with the visible fabric of the body, operating on each part, so as to produce the phenomena of the vital functions.

The deduction that I draw from the whole of the productions of modern anatomy, is a very curious and a very simple one: we know no more after all, than what common sense dictates; we know no more than what a man of sense, in the first ages, would have believed, upon considering the phenomena of life, which is, that there is in living beings an organised structure invisible in the body; and in the common material a principle of life pervading every part—a sentient and rational faculty connected with the brain, but each apparently distinct from the other, though they are all intimately connected, and operate one with the other. Here I go a step beyond John Hunter: I believe sensation to be as distinct from life, as I do life to be distinct from the materials of our body. I say, that is a step beyond John Hunter; but it is an opinion that the most intelligent of mankind have always entertained; it is no new opinion. Have you not life without sensation? Cannot I ask that question? Do you believe that *vegetables* feel? There are some people who have a propensity to take things up by the wrong ends; and I say, if they had a poker presented to them with one of its ends *red hot*, they would lay hold of the red hot part rather than the other end, and burn their fingers of course. (Laughter.) Dr. Darwin has done this: he begins to certify things, deducing inferences from the conduct of man. He says, man performs certain actions, because he *reasons*; therefore he infers, that *brutes* do the same thing, because they reason. This is common belief. Now I really don't know how people can believe it. I know not what kind of faith they possess, I am sure; but I don't believe that *instinct* is *reason*. I believe that it is *a blind impulse*, inducing actions far superior in their effect, to what reason does; but still, it is a blind impulse. A *hen* will sit as vigilantly upon so many pieces of *chalk*, as she would upon eggs; she will peck the ends of the chalk, at the period at which the young chick ought to come out of the shell; and that is instinctive, but not reason. Dr. Darwin himself produces an instance which is a direct contradiction to his doctrine: he tells you that his *kitten*, observing a little water upon the marble slab in his room, went to it and scraped with its foot. Now that was instinct, but not reason; she could never have reasonably supposed that the water was *urine*, and that she could have covered it by scraping with her foot on the Doctor's marble slab. (Laughter.) But it's natural, you know, for foolish people always to judge of others by themselves, and they mistake by so doing. You may judge in this way, if you please; but those who form this notion of reason, must grant the highest degree of reason to the vilest and lowest of animals.

Well, I say, can you believe that life may exist without reason? I do believe it. I don't believe that vegetables feel; or that the lower order of animals feel in the degree in which we do; and as far as we know, all feeling is placed in one point in animals, which is a little *tubercle* at the top of the medulla spinalis. As soon as this tubercle begins to form, so soon we begin to find something sentient; and as this knob begins to grow, and becomes complex, so do animals have additional faculties and powers.

Now that's all I have to say upon the subject; for how any man, or set of men, can possibly believe that those faculties are the result of mere replications of the brain,—for such the convolutions are,—is what I cannot understand. I have no faith of that kind. The brain must be allowed to be the organ by which a diversity of perception is prone to act. We have divers perceptions, and divers faculties; but it is

said that those are only the simple replications of the brain, which form the convolutions. Well, that is very strange. And how is it argued? Why, we have organs by which we see and hear, and smell and taste—giving us diversity of feelings: now, the eye does not see: the reason of the organisation of the eye, you understand perfectly well, is to transmit the rays of light arranged in the same manner as they present themselves from the different visible bodies. The organisation of the ear you understand. But the eye does not see, nor the ear feel: the notions we form must be dependent upon the peculiar properties of that which is perceptive; and it is wonderful: for what can we make of it, if we consider it intently? What is there around us, but matter in different states of motion and of rest? As subtile matter is reflected from objects, it is arranged on the eye in the same order in which it was produced from the surrounding objects. Well, there's the magnetism of the eye. Vibrations take place, and the agitation of the fluids in the labyrinth of the ear produces the sound. O, but it comes to this, that the vital actions of the nerves take place, and those are propagated to the brain; hence are the different sensations produced. All you can make of it is, a sort of vibratory motion; and how from one set of vibrations we can see, and from another we can smell, and from a third we can hear, is certainly very curious; but they are all vibrations, or tremors of the nerves. I say all this I can only attribute to the very curious properties of that which is perceptive; a subject which no one can consider without wonder, and that that has divers faculties superadded, capable of being acted upon by the brain. But I cannot believe that the faculties are occasioned by the magnetism of the brain. Now here the subject becomes *metaphysical*. I do not want to enter into metaphysics in this course of lectures, but I believe if we were to go into metaphysics you would be of opinion, as I am, that there is an unity of all the senses with the brain. They put the organs all in different places; whereas, I ask, how can you account for it? Many of the actions which are performed are the effects of compound motives. There is no answer that can be given, but that it must be done by sub-committees of the different organs—by the board of control. (Much laughter.) Now I say, pho, pho, if you go to the board of control, I am contented. However, every opinion, and so on, has its day; but the opinions which I am in the habit of teaching here have endured from the first ages to the present time; therefore I think they will stand on; I think that all wonders—that all novelties of the day will decline, but that those opinions will flourish.

THE ZOOLOGICAL SOCIETY.

MR. BROOKES'S LECTURE

ON

THE ANATOMY OF THE OSTRICH.

Gentlemen,—In retiring from the practice of anatomy, I fully intended to decline altogether the duties of a professor; but as it is our duty to do all we can for the public good, and as it has appeared to the directors of the Zoological Society that my feeble efforts might prove beneficial for the diffusion of natural history, I am most happy to contribute my mite of information to the accomplishment of such an interesting and useful purpose. Allow me to say, that I hope that the present establishment will prove highly beneficial for the cultivation of zoology, for which no time appears to be better suited than the present, and that the Society will continue to flourish through the zeal of its noble-minded patrons, until it shall surpass all former similar associations, either in this country or on the Continent.

The real primary founder of zootomy in this country, was the late Mr. John Hunter, whose vigorous mind contemplated the vast undertaking of investigating the structure of the organic kingdom, from the smallest vegetable to the Deity's most perfect and noble product—Man. All former attempts were desultory and imperfect; but the several links of the progressive evolutions of nature were traced by Mr. Hunter, until the whole chain was developed. From the conviction of the necessity of studying zootomy thoroughly, the great anatomists of Europe were, about half a century ago, engaged in the prosecution of comparative anatomy: thus we had in London, Mr. Hunter, the top of all; at Göttingen, Blumenbach; in Edinburgh, Munro; in Amsterdam, Camper; that indefatigable zootomist has done me the honour to make respectful mention of my name in his work on the comparative anatomy of the elephant, and when he was last in London, Mr. Shelton and I supped with him, and what do you think our supper was; the delicacies of the season? No; we were regaled with a supper on the bones and teeth of rats and deer served up upon a piece of the rock of Gibraltar. (Laughter.) He was at that time engaged in making some fossil discoveries on that subject. It is not intended, however, that I should enlarge on this point, nor is it necessary that I should enter into further detail of the history of zoology generally, except just to

mention the name of Daubenton with that respect which will ever attach itself to men of deep scientific research.

I have the pleasure of handing to you the arrangement of birds according to the most celebrated ornithologists. (Mr. Brookes gave the classification of Cuvier, Linnæus, and others, to the gentlemen near him.) You will see in that paper, that I have ventured to make an alteration from the system of Linnæus, and if I should have the pleasure of again addressing you, I will explain my reason for doing so.

The ostrich is the largest bird; it is placed by naturalists in the order Struthiones, with the Rhea and Emue. Now the emue is about five feet in height, as you see there,—there is the skeleton of an emue from my museum; it differs materially from the ostrich in several particulars. It differs from it especially in the peculiar shape of its feathers, which are long and wiry, more resembling hair than feathers, and each feather has two shafts. Then again there is the form of the body and foot, the foot is furnished with three claws, the middle of which is very strong indeed, and is a very formidable weapon. I entreat you to regard the foot of the cassowary or emue, and you see what a strong conical acute claw there is on its middle toe. Here again we find another peculiarity in the shortness of its alimentary canal; you see it is very short indeed, and may probably, as suggested by Sir Everard Home, be owing to the ample supply of aliment which this bird finds in its native country. It is much shorter than the same tube is found in the most perfect carnivorous animal, whilst in the ostrich it is often eighty feet in length, and has been found to be from twenty to thirty times the length of the bird. This bird, the ostrich, is the largest and tallest of the feathered bipeds, and when we view the amazing bulk of the thigh, we may imagine the vast power of its muscles, which, acting upon a lever of great length, the tibia and tarsus, enables this bird to run with great velocity. The toes are two in number, and the foot when expanded, resembles that of the grouse. Thus is this individual well furnished by Providence for its erratic habits, being found, in general, among arid sands. Permit me to digress a little, to speak of the strength of muscular action.

Mr. Brookes having returned from his digression, proceeded to speak of the structure of the pelvis of the ostrich. The structure of the pelvis, said Mr. B., is perhaps the most interesting part of its osteology: I must call your attention to this fact, the symphysis pubis, which is not precisely similar in any other bird, and the acetabula, are placed more anteriorly than in either the rhea or cassowary. In the cassowary, the acetabula are nearly in the centre of the pelvis; whilst in the ostrich, from their being more in front, a great portion of the abdominal viscera are situated within its cavity, and serves to counterpoise the weight of the forepart of the bird whilst running, and assisting materially in enabling it to maintain its upright position. The situation of the acetabula in the rhea is nearer to that of the ostrich, but it has no symphysis pubis. Mr. Brookes then made another digression to speak of the symphysis pubis in man, which he said he should always revert to as the great prototype, as the noblest production of the Deity; and although he had before assured the ladies who honoured him with their company that nothing would be said to offend their delicacy, he had not proceeded far in his description of the female pelvis before they were obliged to leave the room. Mr. Brookes said, that an anatomist could always tell by the thinness of the ossa ilii if the woman had ever been pregnant, and said, that the thinness observable in these bones was caused by the pressure of the uterus, producing absorption of their internal structure; a change, we apprehend, attendant only on age. However, Mr. Brookes said out his say, and then came back to consider the structure of the neck of the ostrich, which, Mr. B. observed, pre-eminently claimed the attention of the zootomist; for, said Mr. Brookes, we cannot view this proof of the divine power of the Omniscient, as manifested in the structure of the neck of this bird, without admiration at the contrivance by which muscular power is compensated for by the ligamentum nuchæ. Now muscular power must be relieved; it cannot always be kept in action. The swiftest race-horse on the course was Eclipse, and it was at the same time the most muscular. I was acquainted with Mr. St. Bell, the chief Professor at the Veterinary College, and he took a great deal of trouble to ascertain, by geometrical calculations, the rate at which Eclipse ran. Here is a drawing of that wonderful horse; but if you were not told that it was the drawing of Eclipse, you might take it for a cart-horse.

Now, although the ligamentum nuchæ is comparatively small in man, it is sufficient for his purpose. Here in the emue, which Mr. Pettigrew was kind enough to give me,—I for a long time despaired of ever getting an emue, and I believe that, at present, there are only two in this country,—here, I say, in the emue, the ligamentum nuchæ is of considerable size. Whether you contemplate the neck of the giraffe, the camel,

the swan, or the ostrich, you must remember that the head is suspended by the ligamentum nuchæ, without muscular exertion. Next we speak of the head of the ostrich; and it will be found that the bones of the head are partly occupied by air cells, presenting nearly the same appearance as exhibited by this section, (showing the section of the cranium of an owl,) you see that these cells communicate with the tympanum. You might imagine that the head of an elephant contained a large quantity of brain, but that is not the case; the greater part of the head of that animal is cellular, as you see in this bird. I could have brought the head of an elephant from my museum, but I did not do so, anticipating what has happened, that there would be a house full: however, I have brought a little African elephant. The giraffe is the tallest of the ruminantia; one of which is waiting on the African shore of the Mediterranean to be transported to this country as a present to his Majesty, and destined for the vivarium of the Zoological Society, I hope. It is so high, that it is obliged to kneel to drink. Mr. Burchill, who travelled in the interior of Africa, and banished himself, so to say, for almost eleven years, once saw fifty two of them in a herd, and he fired at one which he saw browsing on the upper boughs of the mimosa giraffa; he sent up his servant into the tree, to measure the height of the place where the boughs were broken, and it was twenty-two feet from the ground.

By the patronage and bounty of his Majesty, we are now enabled to consider the structure of the ostrich; the appearances on dissection were shown you by the drawings I handed to you at the commencement of the lecture; and I now have to speak of the respiratory organs of that bird. The air is distributed from the lungs into the trunk and osseous structure of the bird, so that its bones are filled with air instead of fat, and for this purpose there is a systematic arrangement provided. Here is a strong bone of the Harpie or South American eagle, it was brought home by Captain Sabine, and was at the Horticultural Society's Garden at Chiswick; you see it is replete with adeps.

Mr. Brookes then proceeded to make some observations of the sternum of the ostrich, and to give some account of the history of the bird, that it had died from obesity, and so forth; and thus concluded a long and rambling discourse on what he called the "comparative anatomy" of the ostrich.

FOREIGN DEPARTMENT.

ANATOMY.

Anatomy of the Skin.

M. Andral jun. read before the Royal Academy of Medicine of Paris, in February last, a paper on a case of elephantiasis, which gave him an opportunity of observing on the skin of a white man the three layers stated by MM. Gaultier and Dutrochet to exist between the dermis and the epidermis, and which, up to this time, have only been confirmed in the skin of negroes and in that of animals. A female had formerly had an ulcer on her right leg. For thirteen years the ulcer had been cicatrised, but the limb had acquired an unusual development, and a great hardness; the skin had become full of wrinkles, and of a deep green colour, analogous to that which exists on the cubital side of the hand in negroes; in some instances this colour was black. On dissection, M. Andral found the subcutaneous cellular and intermuscular tissues remarkably developed and hardened, very analogous to the cellular tissue after it has become scirrhous, and the nearer it approached the dermis, the thicker it became. This had also considerably increased in thickness, and in some places could scarcely be separated from the former; the two seemed only to be of different degrees of the same organisation; it was, moreover, neither injected, nor modified in its colour. Above the dermis the capillary body was situated, very much developed in many places, evidently separated from the dermis, and which appeared to be to it what the villi are to the mucous membrane of the intestines. Lastly, above this capillary body, and between it and the epidermis, there were three very distinct layers, one more internal, in the form of a white line, less thick, dipping down into the intervals between the capillary body, receiving no vessel, but formed of a fibro cellular tissue, and being truly that which is called the deep white layer of M. Gaultier, the epidermic layer of M. Dutrochet. A second, more external, composed of very delicate dark filaments, interlaced one with another, forming a being analogous to the coloured layer of the negroes. M. Andral has not seen these small conical bodies, which M. Gaultier has called gemmules, but a net-work very similar to the appearance presented by dried leaves deprived of their parenchyma. In addition, it was to this that the colouring of the limb was due, for the dermis and the epidermis were equally colourless. Lastly, a third,

lying quite beneath the epidermis, being in certain spots, only a white line analogous to the epidermic layer of the papillæ; in others thicker, harder, and as if it were formed of a series of scales placed on each other, being certainly the *superficial white layer* of M. Gaultier, the *horny layer* of M. Dutrochet. Thus pathological anatomy has, says M. Arnold, confirmed what the philosophy of anatomy had already led us to presume, that the skin of a white man is formed of the same substance as that of the negro and animals; this substance, according to the species, either acquiring the greatest point of development, or remaining rudimentary.

THE CIRCULATION IN THE CRUSTACEA.

We have received, from our Paris Correspondent, the following report, made to the Royal Academy of Sciences by Cuvier and Dumeril, the members of a commission appointed to investigate the merits of an interesting paper read to the Academy, entitled "Anatomical and Physiological Researches on the Circulation in the Crustacea," by Drs. H. Milne Edwards, and V. Audouin. The report is highly complimentary to the talents of these gentlemen, and has not yet been printed in any other Journal:—

In all the most recent works on the organisation of the crustacea, the accounts given of the circulation in those animals are most erroneous; for the authors, instead of examining the question in an experimental manner, had contented themselves with combining the ill-established results obtained by Willis and others, with the facts ascertained by the author of the lectures on comparative anatomy. This subject called, therefore, for new and accurate investigations, not only as to the mode in which the circulation is actually carried on, but also concerning the anatomical structure, and the distribution of the vascular system. But, in order to throw new light on this part of general physiology and comparative anatomy, the study of any single species of crustacea would not have been sufficient, nor could it be prosecuted on animals whose organs are hardened, or more or less modified by the means usually resorted to in order to preserve them in our museums; and it was consequently necessary that these researches should be carried on near the sea coast, where the crustacea, whose form and structure present the most striking difference, can be procured with ease. It was in order to attain this end, that Messrs. Milne Edwards and Audouin, took up their abode at Granville, a small town situated on the borders of the channel, where they were sure of meeting with the necessary means for prosecuting their studies, and where they collected the materials of the great work which they have laid before the Academy.

In the brief exposé we are about to make of the researches of our authors, we shall not adopt exactly the order which they have followed. Their first paper contains the chronological history of the knowledge acquired, and of the opinions entertained respecting the circulation in animals belonging to this class; they next relate, with the most minute detail, the experiments which they performed on living crustacea, in order to ascertain the mode in which circulation goes on in those animals.

The second memoir comprises the anatomical part of Messrs. Milne Edwards, and Audouin's researches, and the description of each of the organs belonging to the circulatory system. It is illustrated by twenty coloured plates, in which the mode of distribution of the different blood-vessels is represented in divers crustacea, brachyars, macrouri, and stomapodi. This comparative description, which is presented with great minuteness, shows that in most animals of this class, circulation is carried on in the following manner:—

The blood or liquid, which is set in motion by the contractions of the heart, penetrates into the cavity of that organ, by means of two large branchio-cardiac vessels, the orifices of which are provided with valves so disposed as to hinder any retrograde motion of the circulating fluid; six large vessels arise from the heart, and constitute the arterial system; three of these take their course forwards, and carry the blood to the eyes, the antennæ, and the neighbouring parts; two other arteries descend almost perpendicularly, and distribute their branches to the different lobes of the liver; the last, which is the most considerable, and may be considered as an aorta, supplies the lower part of the thorax, the abdomen, the posterior extremity of the animal, and all the appendices of the body.

In all these animals, the veins appear to be in direct communication with the terminations of the arteries, but their coats are so extremely thin and delicate, that they seem to be formed only by a species of cellular membrane fixed to the substance of the organs which they pass through; a disposition somewhat similar is met with in the veins of the dura mater in mammalia, and one of us had also noticed it in certain species of fish belonging to the class cy-

clostoma. It renders the dissection of these organs extremely difficult; and it is only by insufflation, or by injecting the veins with coloured fluids, that Messrs. Edwards and Audouin, were able to render them visible.

All the ramifications of the venous system terminate in one or two large sinuses or reservoirs, situated on the sides of the thorax, and surrounded by thin crustaceous or bony lamina, which constitute a certain number of cells communicating with each other; the vessels situated on the outer surface of the branchial pyramids, take their origin from these sinuses, and their branches communicate with the ramifications of other vessels, which take their course along the inner side of the respiratory organs. These latter veins are the efferent ducts, which carry the blood back to the heart, at the side of which they open, after having united to form a single trunk, the orifice of which, as we have already mentioned, is provided with valves intended to hinder the blood from returning towards the branchia during the contraction of the heart.

Such is the theory which could have been deduced from anatomical investigation; but Messrs. Milne Edwards and Audouin, have also established it in the most indisputable manner by their researches, and by the experiments we shall soon mention. By their anatomical labours, our authors have completely demonstrated the mode of circulation in three great families of the order of crustacea; they have pointed out many errors in works, in other respects greatly esteemed; they have furnished positive proofs of the mode of branchial circulation already mentioned by the authors of the lectures on comparative anatomy, and they are the first who have pointed out and perfectly appreciated the functions of the venous sinuses, which present the greatest analogy with the organs of a similar nature, described by M. Cuvier in certain mollusca, and particularly in the sepia loligo.

The physiological experiments contained in the first part of this work are undoubtedly of importance, and most likely they aided Messrs. Edwards and Audouin in the discovery of the facts which they have made known in so complete a manner; but the results above mentioned could only be obtained and properly understood, after the exposition of their anatomical investigations. The principal experiments may be reduced to four. By the first, the authors ascertained that when the liquid contained in the internal or efferent vessel of the branchia is drawn out by means of a glass blowpipe, the blood does not fill the vessel anew. The second experiment, which appears more demonstrative, consists in the introduction of air into the branchial vessels of a living animal, for its progress in the vascular system rendered visible the course followed by the blood. When the air was sent into the efferent vessel, it did not pass out of the branchia; but when introduced into the efferent vein of those organs, it penetrated into the cavity of the heart, and was propelled into all the other vessels arising from the heart, and which constitute the arterial system; and, lastly, the fourth experiment proves, that coloured fluids injected into the venous sinuses, penetrate from thence into the branchia by means of the efferent veins.

Such are the facts positively established by these interesting researches, which are calculated to throw great light on this part of comparative anatomy, and which it is to be hoped the scientific world may soon be able to profit by. We therefore propose, that the Academy should order this work to be published in its collection of the "Memoires du Savans Etrangers."

(Signed) Baron Cuvier.
Dumeril.

The conclusions of this report are adopted by the Academy. Paris, March 19, 1827.

(Signed) Baron Cuvier.

PHYSIOLOGICAL OBSERVATIONS.

By James Carson, M.D. Liverpool.

An explanation of the causes by which the arteries are emptied immediately after death, was printed in the Medico-Chirurgical Transactions of London for the year 1820. Many inferences, important in my opinion in a physiological, pathological, and economical view, may be drawn from that doctrine. A few of these, with a reply to some objections which have been raised against the doctrine itself, will constitute the present communication.

As the doctrine of the vacuity of the arteries after death, as laid down in the paper just noticed, may not be familiar or known to all the readers of The Lancet, I shall now briefly repeat the argument by which it is supported.

The organs engaged in the circulation of the blood appear to be of two kinds; the first acting from irritability, and the second

from elasticity. The first class of those organs, or that possessing irritability, is the heart and arteries; the second, or that possessing elasticity, is the lungs, the fibres of the heart, so far as they have a resilient or elastic property, and the coats of the arteries. The organs which derive their influence from irritability, possess it only during life, and are deprived of it by death; while the organs which act from elasticity enjoy their influence, independent of life, and after death, as long as the structure is unimpaired.

By the due balance of the powers derived from those two sources, the blood is circulated through the system without deficiency or accumulation. But at the moment of death, and occasionally for some time before that, the irritable property of the organ is lost, or nearly so, while the elastic property remains unimpaired, and becomes predominant and uncontrolled. It is by the organs possessing irritability that the blood is transmitted from the heart to the extreme vessels, while it is returned to the heart by the organs which act from elasticity. When the heart ceases to transmit more blood into the arteries, atmospherical pressure, made available by the elasticity of the lungs, and the resilient property of the heart itself, and the elasticity of the arteries, presses the blood towards the chest, where it meets with less resistance through the veins. Hence the vacuity of the arteries after death, and of all the extreme vessels, with the *facies Hippocratica*, and the paleness which characterises the whole surface of a corpse, and the accumulation of blood in the vessels of the chest and venous trunks. The great fulness observable in the venous trunks beyond the limits of the chest, it may be remarked, however, appears to take place after the chest has been opened, when the blood is pressed out of the pulmonary vessels into these trunks, by the collapsing of the lungs. Any one may readily be satisfied of the truth of this, by observing the state of the abdominal cava before and after the chest has been opened.

The first inference proposed to be drawn from this doctrine, respects the method of killing quadrupeds designed for human subsistence.

An observation of the manner in which animals are slaughtered for human subsistence, suggests several important considerations. Take, for instance, the slaughtering of an ox: a blow with a hammer or an axe, is inflicted upon the top of the head, fracturing the skull. The animal generally falls down after the first blow, which is repeated again, until the animal becomes nearly motionless, and till the breathing and action of the heart have ceased. He is then bled with all possible expedition, and in the following manner:—the integuments of the neck are slit down from the throat to the top of the chest; the vessels opened by the butcher are neither the carotid nor the jugulars, which in the present state of the animal would discharge little blood, but, taught by experience, he takes the windpipe as his guide, and searches downwards till he reaches the top of the chest; he then divides, or rather cuts through, the contiguous vein, which is the pectoral cava, or the largest branch of it, after it has penetrated the chest outwards. From this opening the blood flows in such torrents, that between four and five stone weight of blood is often discharged in less than a minute. In this process an incision into the cavity of the chest is carefully avoided. From what cause does it happen that so great a quantity of blood is discharged in so short a time? The phenomenon, which has not hitherto been remarked, or sufficiently considered, is easily and satisfactorily explained upon the principles laid down at the commencement of this paper. The elasticity of the lungs, which is very powerful in this animal at the age at which it is usually killed, withdraws from the venous blood on the side of the heart a portion of the pressure of the atmosphere. The blood yielding to superior pressure, flows towards the heart through the cava, which, in the present circumstances, it can do in a continued stream, for the blood is discharged as rapidly from an opening made at the superior end of the cava, but without the chest, by gravity, acting in consequence of the somewhat depending position of the shoulders and neck of the animal. The elasticity of the lungs acts against the discharge of blood from the confines of the chest, but this power is overcome by gravity. In popular language, suction pumps the blood from the system into the cava, through which it is discharged by gravity. The vessels of the larger circulation, both venous and arterial, are nearly all deprived of blood by this process. When the chest is opened, the blood in the pulmonary vessels, which had hitherto been full, is returned by the collapsing of the lungs into the contiguous venous trunks, which, though empty and tape-like before, become rounded and turgid.

The Jews slaughter their animals after a different method. The priest, or person qualified for the purpose, with a very sharp large knife, makes a deep incision into the throat, near the neck, dividing the windpipe and both the jugular veins and carotid arteries. From this wound the animal bleeds to death, and usually takes from twenty to thirty minutes in dying. This, in my opinion, is a much more cruel method of slaughtering than that in common practice; and with respect to the end in

view, the more complete separation of blood, considered by the Jews impure, not more effectual. After the animal has been bled to death, the process of searching takes place, that is, the examination of the viscera, for if these are not found to be sound, or in the natural number and order, the carcass is rejected by this scrupulous people as an article of food. In searching, the abdomen is opened, and the viscera of this cavity examined. But the chief concern of the examiner seems to be directed to the thoracic cavity, as there, and in the lungs, life is supposed by him to reside. After the diaphragm has been freely exposed on the abdominal side, the priest makes a large opening into the right side of the thorax, through the diaphragm. I was struck with the loud noise accompanying this operation. A person, who was standing at a distance, and who was experienced in the business, exclaimed, "that shows that all is sound." The noise was evidently produced by the violence with which the atmospherical air was pressed through the opening, in consequence of the rapid resilience of the lungs. An opening was then made through the left side of the diaphragm; a sound similar to the former, but not so loud, was produced. Through these openings the pectoral viscera were examined. Nothing could more decidedly prove the extent and rapidity with which the lungs resiliated than this operation.—The noise, though diminished, which accompanied the second incision, proved that the mediastinum, though it must have yielded to the greater weight now laid upon its right surface, was sufficiently tense to keep the left lungs in a state of considerable dilatation, and that breathing might be continued after the air had been freely and permanently admitted into one cavity.

The smaller animals, as sheep, lambs, &c. are bled in both ways. In the first place, the carotid arteries are divided, and after as much blood as will flow has been obtained in this manner, and when the animal has become lifeless, the butcher, following with his knife the course of the wind-pipe, makes an opening into the chest, and divides the cava within the chest. A small quantity more of blood is discharged. This is what was contained in the pulmonary vessels, from which it is now discharged through the opening in the cava by the collapsing of the lungs. The butcher is induced to take this last step chiefly to avoid the dirtiness which, as he calls it, would be produced by the effusion of blood over the carcass.

Any one may be satisfied of the truth of this description of the mode of slaughtering both oxen and sheep, by an easy examination. In the case of the ox, by introducing the hand along the wind-pipe, you are led to the cava, opened exteriorly to the chest. This vessel will admit two or three of the fingers, by which you are enabled to ascertain the state of the vessel within the chest; it is found to be a cylindrical tube in full and uniform distention. This condition is no doubt maintained partly from the structure, which is cartilaginous and unyielding, and partly by being nearly surrounded by the lungs, and subject to a distending influence on all sides, in consequence of their resilient structure.

The importance of the share which the vena cava discharges in the circulating system has not hitherto been sufficiently known or appreciated. It is a vessel whose dimensions are fixed, or nearly so, and at all times contains the same quantity of fluid, and no fluid can be drawn from it by the heart, unless an equal quantity be introduced into it synchronously from the system. There seems to be a great analogy between the office of the vena cava and that of the sinuses of the brain. When the lungs are sound, and possessed of their natural elasticity, there would be less occasion for that rigid cartilaginous structure in the cava, as its dilatation would be always fully secured by the resiliency of the substance with which it is chiefly surrounded; but in those cases where the lungs have been altered in structure by struma and scirrhus, when, in short, they have lost their elasticity, then the incompressible condition of the cava becomes most important; so far, indeed, as the blood is returned by suction to the confines of the chest from the general circulation, it supplies the place of the elasticity in the lungs.

According to the institutions of Moses, the blood is deemed impure, and is rejected as an article of diet. Perhaps our practice of rejecting it may be derived from the same source. The prejudice, probably, originated, and has no doubt been strengthened and confirmed, by observing the qualities of blood when in a mass. In this condition the blood becomes soon offensive to the senses and disgusting to the appetite; but it does not necessarily follow from this, that it should be so when distributed in infinitely divided particles through the whole system. The fat of animals, when collected in a bulk, is equally offensive and disgusting; but when mixed in due proportion with the lean parts, it greatly improves the whole as an article of food. I am led to believe that the uniform and general distribution of blood, as it exists in the living animal, would be equally improving to the flesh as an article of food. There are several parts of the animal in which, according to the usual method of slaughtering, the blood is detained in the manner in which it existed during life. In the way in which an ox is slaugh-

tered, by dividing the cava leading to the head, the suction influence of the lungs is cut off from the head, tongue, and neck. The flesh of these parts is much redder evidently, and is charged with a greater quantity of blood than the rest of the body; but these parts are not injured by that means. The heart lodges within the chest, and is not subjected to any depleting influence; and the brain and membranes, which from their situation must by every mode of death in which the cranium is not injured retain the same quantity of blood after that they did before death, are generally considered delicacies. But I have used repeatedly the flesh of animals killed in such a manner, that the blood was all retained in the same proportion in which it existed during life, and found it always remarkably juicy, tender, and sweet. These animals were all killed by commencing the process of destruction by the collapse of the lungs.

According to my experience and belief, a great diminution of the nutriment which might be derived from the flesh of animals without any improvement, but, on the contrary, with a deterioration of the quality of what is used is sustained, by the manner in which quadrupeds, designed for the food of man, are slaughtered.

From the preceding observations, it is evident that both the appearance of the external surfaces, and that of the internal parts, will be greatly affected by the kind of disease or death by which the animal has been destroyed. In those deaths in which the elastic spring of the lungs is perfect or unimpeded, the face and whole external surface of the body will be shrunk and pale. They will assume that appearance which generally a corpse does. What is called the *facies Hippocratica*, will, in effect, be extended over the whole body. The same change will take place in all the internal surfaces. For all the arteries and capillary veins which, when full, give a red life-like appearance to the parts, will be completely empty. If, however, the elasticity of the lungs has been greatly impaired, or this elasticity, though unimpaired, has been obstructed in its usual influence by some interposing substance, then neither will the external appearance of the body be much changed from what it is during life, nor will the internal surfaces be so pale. It is in these circumstances, that what is called a pretty corpse is observed; and, in these circumstances, the internal organs will appear as in a state of inflammation. I shall mention deaths, which will exemplify both the conditions which I have supposed; the one by which the elasticity of the lungs is destroyed by a morbid change in their structure; the other, in which the elastic effort of the lungs is sustained by another substance, and therefore cannot influence the motion of the blood. In those cases in which the substance of the lungs has become solid, as when they are very tuberculous or scirrhous, when the lungs, in consequence of morbid structure, do not collapse; when the chest is opened, dissection will, in such instances, expose the organs in a state of apparent inflammation. Hence, when appearances of inflammation are discovered in *post-mortem* examinations, before any inference should be drawn from this appearance of the nature of the disease producing death, the state of the lungs should be carefully examined. If they have collapsed imperfectly, inflammatory appearances may be accounted for, without supposing them to be the effect of disease. On the contrary, if the lungs are powerfully elastic, and, upon being exposed, shrink into small dimensions, inflammation may have existed in the organs, without any signs of it being discernible on dissection.

An example of the second condition, or that in which the elasticity of the lungs is perfect, but in which the resilient effort of these organs is sustained by some other substance, occurs in the case of drowning. Dr. Harvey observed, that in animals which had been drowned, the arteries were found to be full of blood. The fact observed by the illustrious discoverer, may now be easily and satisfactorily accounted for. Great light has been thrown on the effects produced on the body by drowning, by the experiments of Mr. Johnstone of Torrington. It was, before these experiments were made, the general opinion that when an animal was drowned, little or no water entered the windpipe. This opinion probably arose from no water having been found, in these cases, in the windpipe, or any of its ramifications. But it appears evident from Mr. Johnstone's experiments, which I have found perfectly correct, that water, when an animal is drowned, flows abundantly into the windpipe, either before or after death, and that this water is imbibed by the aerial and sanguiferous vessels of the lungs. The lungs, in cases of drowning, are always found distended by the fluid, whatever it may be, in which the animal has been drowned. They do not collapse, the colour of the countenance and body generally is little altered, the arteries, agreeably to the observation of Dr. Harvey, and capillary vessels, are filled with blood, and the internal parts exhibit on dissection the appearance of high inflammation. I found that a great quantity of water was taken into the chest, if the drowning was tedious. In the case of a large dog, which occasionally, in opposition to the force that was used, got his head to the surface of the water, and which struggled long, not only

were the lungs distended and full of water, without any tendency to collapse, but the heart was enormously distended with water and blood, and had sunk with the relaxed diaphragm, into the belly. I found the lungs of a cat, which had been drowned in buttermilk, distended with this fluid, and exhibiting, when the external air was admitted into the chest, no tendency to collapse. As the death was speedy, none of the buttermilk had reached the heart. It will be asked, how does it happen that no part of the fluid in which the animal has been drowned, is found in the windpipe and its ramifications? The cause of this may be well explained. When the body of a drowned animal is in the water, it is subjected to a greater pressure that it is after it has been taken out of it; for, in addition to the pressure of the atmosphere, it sustains that of a column of water, of greater or less weight, according to the depth to which the body may be immersed; the abdomen and chest are subjected to less pressure; when the body is removed from the water, the elastic parts of the body will resiliate to a certain extent, upon the pressure being lessened, and the capacity of the chest will be enlarged to a degree sufficient to enable the lungs to imbibe the fluid that had filled the windpipe and its ramifications, when the body was still immersed.

In a paper on the circulation of the blood in the head, printed in the Edinburgh Medical and Surgical Journal, I took occasion to remark, that great turgescency might appear in the vessels of the encephalon, in certain states of the frame, without any disease existing in that quarter. In cases of great emaciation, from whatever cause, it cannot be doubted that the substance of the brain itself diminishes in proportion with the decay of the rest of the body. But the cavity of the cranium must be filled. There are two sources from which Nature draws the supplies necessary for that purpose, either by increasing the quantity of blood in the vessels, or by accumulating water in the ventricles. Hence the important uses of the ventricles. Both these resources are, I believe, usually employed at the same time. An unusual turgescency of the vessels of the head, is not always, at least, to be regarded a proof of disease, or of a morbid collection of blood in that quarter. This has not, I fear, been sufficiently attended to, and has suggested a treatment, in similar cases, of a very inefficient, if not pernicious, description.

In all cases in which it is the wish to ascertain the causes of death by *post-mortem* examinations, the state of the system, and the condition of the organs, particularly of the lungs, ought to be kept constantly and steadily in view. This will be particularly requisite in cases involving legal proceedings. Suppose, for instance, a person to have been drowned, and a suspicion to have arisen that this person had been poisoned, and the body thrown into the water to conceal the murder. The stomach and bowels of the deceased, in the case of his being actually drowned, would exhibit that appearance which is supposed to indicate the existence of inflammation in those organs previous to death; the life and character of an innocent person might be brought into danger, or even destroyed. This deplorable occurrence might the more readily happen, since the prevalance of the doctrine, that a person may be killed by swallowing corrosive sublimate, without any of that substance being discoverable in the contents of the stomach.

The foundation on which the argument maintained in the preceding pages rests, has been disputed by some, and claimed as an original discovery by others. An American physician, whose name I do not recollect, says that he has performed the experiments detailed in my paper on the vacuity of the arteries after death, and printed in the Medico-Chirurgical Transactions, without finding the same results. He admits that blood was found in the arteries of animals killed by the free admission of atmospherical pressure upon the external surface of the lungs, but ascribes this effect to some other causes. He admits, also, the brown appearance, and the greater vascularity of the membranes at first, but that these appearances are not permanent; for this also he has a theory of his own. One expression of mine I admit to be too strong, that the flesh when cut into bled. This effect would have been subversive of the principles I was advocating. I should have said that blood oozed more freely from divided surfaces. But what is the use of disputing about appearances, of which every one may easily be satisfied by observation, and for the correctness of which, as detailed in my paper, I could adduce, if required, abundant testimony?

Two doctrines have been lately revived, about which, at one period, there was a considerable controversy, but which, for the last half century, have been rejected by all physiologists. These are, that the lungs possess the power of self expansion, and that these organs do not always extend to the parietes of the chest. The revival of these doctrines is, I think, chiefly to be ascribed to Dr. Williams, a physician of Liverpool; and was the result of a series of experiments made by that gentleman, in co-operation with Dr. Traill, also a physician of this town. I shall notice these doctrines in succession. With respect to the first, that the lungs possess the power of expand-

ing themselves, and that it is in consequence of this power that respiration is in a great measure performed; I have to observe, that from an examination of the structure and form of the lungs, it is impossible to conceive where this power can reside. No traces of a mechanism fitted for such a purpose are discoverable; and life can only produce movements by putting into action moving powers. A state of collapse is, without doubt, the natural condition of the lungs. In this respect the lungs differ from the ventricles of the heart, of which the natural condition is that of expansion. The heart possesses, therefore, the power of automatic expansion, after contraction. The lungs, without doubt, possess elasticity, which is stronger in proportion to the degree they may be expanded; and it is impossible to discover in the lungs any antagonist mechanism by which, with the aid of life, this elasticity can be overcome. But it will be said that experiment, to which reasoning must give way, proves the fact. The experiments by which a doctrine so improbable can be established, must, indeed, be clear and unquestionable. One can scarcely suppose any experiments so conclusive in favour of that doctrine, as not rather to induce the belief that some hidden fallacy existed, than admit so unreasonable a conclusion. But the experiments brought forth in support of this doctrine, are by no means of a conclusive character, and the results may be explained without having recourse to any violent supposition. The experiments were to this effect:—When an opening was made in the side of a dog, between two of its ribs, admitting freely the external air, the lungs during inspiration were seen to expand to a certain degreee. The lungs sometimes protruded themselves through the openings. With respect to the first appearance, the expansion of the lungs during inspiration, it is to be observed, that at the lowest stage of collapse, the elasticity of the lung is very weak; that when the animal, in order to inspire, made a quick and violent effort by a rapid and extensive contraction of the diaphragm and muscles of the chest usually employed in its expansion, contracting, or perhaps closing at the same time the orifice in the side, the air required to fill the sudden vacuity in the chest has two passages to enter, the wind-pipe, and the orifice made in the side of the animal. The quantity of air required to bring the contents of the thorax to an equality of pressure with other substances, and to be admitted through a contracting orifice in a moment of time, must be subjected to great resistence from friction against the sides of the orifice; that this resistence may easily be supposed to be greater than the elasticity of the lungs approaching to a state of collapse; that the air entering through the wind-pipe would sustain less resistence from the slight elasticity of the lungs than that from friction in entering the contracted orifice; and that the lungs must necessarily be expanded to a certain extent; and an imperfect breathing be the result. The expansion of the lung is then readily accounted for. Dr. Clutterbuck, who seems to have embraced the opinions of Dr. Williams, with regard to the self-expanding power of the lungs, refers to some experiments that were in progress by a Mr. Lloyd, as confirmatory of it. But though we know not the nature of these experiments, no reasonable man can have any doubt of their efficacy.

The lung sometimes protruded through the orifice. No mention is made by the experimenters at what stage of the respiratory process this takes place; from the value laid upon this fact, as affording strong proof of the self-expanding faculty of the lungs, it would be inferred to have taken place during inspiration; but this is not the fact, it is always during expiration that any part of the lung protrudes. Upon the subsequent contraction of the chest, when the animal makes a strong effort to expire, the air which had entered by the orifice is again expelled through the same orifice, and carries along with it whatever may be in its course. A part of the light lung is occasionally swept through the orifice. This is more likely to occur if the orifice is small and high in the chest; for when the opening is extensive and near the diaphragm, no part of the lung will make its appearance. In all cases in which the lung was freely and permanently exposed, no movement was observable in the lungs, and the animal died in two minutes.

The next inference which Dr. Williams draws from his experiments is, that the lungs do not at all times fill the cavity of the chest, or that the pleura pulmonalis is not at all times and throughout in contact with the pleura costalis. This, if possible, is a still more extravagant and unphilosophical supposition than the preceding. What, it may be asked, lodges between the lungs and the parietes? Is it water? Then we have hydrothorax. Is it air? In that case we have a still more troublesome inmate, and one still more adverse to respiration, in consequence of the elasticity of the gaseous substance. The opinion, though it appears to be held by Dr. Williams, and indeed is the only one which is consistent with the uses of a self-expanding faculty in the lungs, that an actual vacuum exists in the chest, and that this vacuum is at one stage of the process of respiration occupied by the lungs, and at another again abandoned by them, is too absurd to merit a moment's considera-

tion. But all our reasoning must yield to the superior authority of experiment.

Dr. Williams perforated the chest of an animal in such a direction that the instrument must pass through the lungs, if these organs filled the chest at the time; but the lung was not wounded, therefore the lungs could not have filled the chest at the time the perforation was made. The experiment now adduced as new by Dr. Williams, was made in the days of Haller, and urged against the doctrine of this physiologist, who contended that no space existed between the lungs and the parietes of the chest. After the triumphant refutation which Haller on this occasion gave to his opponents, and which had appeared to set the question for ever at rest, the renewal of it at this time evinces, at least, no small degree of intrepidity. Haller was not, as he might have been, satisfied with his convincing reasoning; he obtained, by great labour, ocular demonstration of the fact. He dissected down upon the pleura costalis, and into it without dividing it, so as to render it transparent, and at every point, between the ribs, in the diaphragm and mediastinum, saw the pleura pulmonalis in contact with the pleura costalis. With respect to the experiment in which the chest was perforated, no value can be placed upon that, as there are various sources of error, which seem not to have been attended to by the experimenters. In the first place, along with the instrument, admission may have been given to the atmospheric air, which even in a small quantity, in consequence of the strong resilient spring of the lungs, would cause these organs to recede from the chest; or the instrument, on reaching the lung, might puncture the pleura pulmonalis, through which puncture air might escape in sufficient quantity to allow the lung to recede from the chest. Or, in the third place, and which is the most probable occurrence, the instrument may have transpierced the lung, which would collapse and grasp the instrument. No blood would flow in that case from the wound, even when the instrument was inserted; when it was withdrawn, the wound would contract in proportion to the extent of the surface belonging to the lung in a state of collapse, compared with that belonging to it in a state of full expansion. The wound made by a knife of considerable size would, when the lungs were collapsed, be reduced to the extent of a puncture made by a pin; and as the surface of the lungs, when collapsed, is covered with rugæ, such a wound, as it would discharge no blood, would be indiscoverable to the eye. Had the experimenter inflated the lung, he would, I have no doubt, have found that the pleura had been pierced. In the experiments made with a view to ascertain the extent of the elastic power of the lungs at the full dilatation, and detailed in a paper printed in the Philosophical Transactions for 1820, my chief difficulty was to penetrate the pleura costalis, without wounding the closely applied pleura pulmonalis; I frequently found the latter wounded, with every possible care to avoid it, when, as was necessary in my experiments, I attempted to inflate the lungs. Though wearisome, it may not have been altogether unprofitable, that I have been compelled to examine fields already sufficiently explored by the additional light which the recent discoveries in physiology are fitted to supply.

(To be concluded in our next.)

SKETCHES

OF THE

MEDICAL SCHOOLS OF SCOTLAND.

No. V.

"Private Schools of Edinburgh; Royal Medical Society; Robertson's Colloquia," &c.

THERE is a place in Edinburgh, which has derived an honourable appellation from its connexion with science; a little secluded quadrangle, sacred to love by night, and lectures by day; an assembly, in short, of some forty or fifty houses, which, from being almost exclusively in the service of the profession and its dependencies, has been appropriately denominated Surgeons' Square. Though obscurely, yet conveniently located for the exercise of its peculiar avocations, being situated in the immediate neighbourhood of the Infirmary and the University; it is ground, teeming with interesting recollections to the old, and to the spectator of the present day a field fraught with materials of philosophical speculation. But to avoid the tediousness of further description, this celebrated spot, known to half the profession, is a sort of Grub-street in the medical world; every "flat" of which has its philosopher, and every philosopher, as in others of old, his band of followers. Look up to any door within its precincts,—a brazen invitation directs you to such a professor's rooms; turn round in another direction,—a tide of students rolls on your vision; enter it at any hour between the sun's rising in the Forth until he sinks in the Clyde,—you are sure to find

some of the labourers in this vineyard of corporeal salvation engaged in their sempiternal toils. Season makes no exception to their unwearied assiduity; the winter course makers in the spring; the summer in its turn introduces the autumn; in a word, a new lecturer plunges into a new theme with the sun's entrance into another sign of the zodiac. No matter what may be your intellectual wants; no matter what your appetite for the mere necessaries or elegancies of your profession, in this compendious bazaar you can have all your wishes gratified at the most reasonable rates, and expeditious terms. Science, languages, modelling, medical drawing, every thing, from phrenology down to "Evening readings on Celsus," are here exposed to market. Did you never dissect a subject?—it matters not; there above, under a sky-light, is your man, who will perfect you in the science without ever soiling your fingers. Or, did you forget what you once knew?—it is quite immaterial; there he is, who will revive your dormant recollections as quickly as flame regenerates the latent symbols traced with sympathetic ink. Are you for the army or the navy?—for the Bahamas or Bengal?—'tis all the same; here are doctors to instruct you in the duties of the cockpit and the caravan; in the treatment of the land and sea scurvy—of the black vomit of Jamaica, and the cholera of India; the endemics of the East and the West, the pathological experience of Waterloo and Trafalgar, are all ready mixed to be decanted into your mind through a funnel of three sovereigns, or an equivalent filter of Sir John Forbes' one pound notes. Whatever, in fact, may be your necessities or destination, for the College or the Halls, Surgeons' Square (heavens bless it!) is the spot where all your cracks will be soldered, and sent as staunch as a bottle on the great voyage of professional life!

The operation of this complicated machine, the effects of which are at once so manifold and extraordinary, demands a closer investigation. We must inspect the manufactory at full work, see the process of production actually performed, in order to appreciate the subtlety of the invention, and to admire the mode in which so much pretension can be realized. Numerous and difficult as the objects to be accomplished might, at first sight, appear; yet the simplicity of the means by which they are attained, is equalled only by the humility of those agents which are known to effectuate the most wonderful results in the great laboratory of nature. Thus if we enter one of those theatres advertised for anatomy, nothing can be more simply, yet ingeniously conducted than the business of the concern—the semblance of anatomical tuition being strictly preserved, while the reality is entirely absent. The foundation of that science, as the osteologists have it, is indeed present in the bones of a skeleton dangling from the ceiling; the soft parts have a momentary existence in the description of the demonstrator, aided, perhaps, by a book of plates; while the rest is accomplished by the dexterity of the speaker on a black board with chalk; and when chance, or the resurrection man is propitious, by the amorphous fragments of a subject which all the antiseptic properties of a spirit bath were unable to preserve in either shape or colour. It is quite incredible, notwithstanding the apparent deficiencies of this system of communicating instruction, to what a degree of perfection it is reduced; how triumphantly the human mind rises above all difficulties, and accommodates itself to every contingency of adverse circumstance. For, only converse with one of the *alumni* of these gymnasia of the memory, and you will be surprised to find him a perfect Albinus on "attachments" and "insertions," on "courses" and "spaces." You will be astonished to observe by what discipline he has been enabled to collect the several parts of the body into one consistent whole from these desultory exhibitions, and preserve it in the "mind's eye," so that the position of any portion of the frame being demanded, he will afford an answer to the proposition in the twinkle of an eye. Continue the conversation, however, a little further, or throw out some doubts on the accuracy of his responses, and instantly he overwhelms you with the authority of the "grinder," and hurls his definition at your head in the shape of a Latin quotation. At first, indeed, you might suppose that this ebullition of latinity flowed from no meaner source than one of those revered fathers of the scalpel who clothed their knowledge in a dead language, but on inquiring still further, this pageantry of phrase dwindles down into an answer from "Robertson's Colloquia."—The history and objects of this infamous horn-book of empiricism are, I believe, so imperfectly known out of its immediate sphere of operation in Edinburgh, (for happily the agency of such a nuisance is not required in any other medical seminary in Great Britain,) that some account of it seems necessary. The writer of it knew his ground well; was a perfect proficient in the science of human nature. There are, said he to himself, as he conceived this mercenary project, a thousand medical pupils annually in Edinburgh, of nine hundred and fifty of whom it is not too much to predicate, that they are incapable of speaking latin.—Others write their books in English, and communicate information in that language, but knowledge may be rendered still more acceptable and useful by being turned into

Latin, and I am their man. Straight flew the pen into his hand, and out came some of the sciences, clothed in a barbarous jargon, in the form of question and answer, the reading of which produces much the same effect on the ear as the setting of a hand-saw. The portions of the work already published, I am informed, have been all bought up, and it is understood that the author intends to manufacture another series of his abominable catechisms of quackery. The design too, if I mistake not, has received the sanction of one or two of those abettors of ignorance, the medical journals. It is to be found in every hand, and like those malignant plants which grow up amongst and destroy more useful vegetables, it has almost banished every other book from the student's library. Meet one of them at any hour of the day, and ten to one but you will discover this counterfeit of science on his person. Yet it is out of this compendium of charlatanary that the catachumens of the University are prepared to receive the spirit of Æsculapius, called down on them in the benediction of the reverend Dr. Duncan on the day of graduation.

But to return from this digression to the amenities of Surgeons' Square. At every corner we find chemistry taught without laboratories, and medicine by words instead of diseases. To lectures, all things seem possible; they are the universal medicum through which every science would appear communicable, and the ear the only one of the five senses through which knowledge can reach the mind. These dilettante exhibitions resemble in eccentricity the ludicrous spectacle of a shoe-maker, who, in order to teach his art to a pupil, would hang up before him an elegant shoe as a specimen of the craft, and read for an hour each day an elaborate discourse on its symmetry; on the various kinds of leather, and the effects of steeping and beating it; on hemp, and its manifold uses and properties; on rosin and bristles, and their different qualities and magnitudes; and conclude with a dissertation on the opinions of all shoemakers of all ages and nations, and on all sorts of ornaments for the feet, from the Roman sandal down to the Hessian boot. Yet the Crispin who would act thus, would be most probably remitted to the madhouse, and his pupil sent to some master who would put an awl and thread into his hands, and who would supply him with leather instead of lectures. The man, indeed, who, by establishing a laboratory, and by merely superintending the performance of experiments by his pupils without any lectures at all, would do as much for the diffusion, as Sir Humphry Davy has done for the advancement of chemical science. But then Dr. Hope, or any other doctor in an university, could not so well manage two or three hundred pupils according to this arrangement, and the wisdom of the age has decreed, that it is better that pupils should be destitute of practical information, than that patentee lecturers should be without their price. The trade, however, in education carried on in this little emporium of commercial instruction, renders it, perhaps, a fitter subject for serious comment than ludicrous description. Being a sort of nursery to the University, it affords a favourable opportunity of conjecturing the constitution of the titled adult from observing his habits and regimen during his professional infancy. Such a total absence of the necessary materials of tuition, such a famine of scientific sustenance, if it may be so expressed, as there is to be witnessed in this quarter, can leave very little doubt on the mind as to the effects of such a defective system of education on the medical and surgical graduates of Edinburgh. It is here, indeed, within a few square yards, that Dr. Duncan's incomparable system, which he thinks incapable of further improvement, may be contemplated in all its perfection. It is the living volume, indeed, which teaches by example, and eschews every assistance from speculative reasoning; or, if such were necessary to prove our happily constructed institutes in error, this is surely the armoury from whence the logical aggressor might point every argument with a fatal fact. Whoever, therefore, would study the operations of our celebrated school, let them take up Surgeons' Square for his text book. "Read it by day, and study it by night." Not but there are men here of the highest qualifications for their office; such, for one, is Mr. Liston, with respect to whom, it is discreditable to Edinburgh that he holds no situation in which his peculiar talents might be elicited, and made subservient to the purposes of more general instruction. But the men thus qualified to discharge all the duties of teachers, possess not the means of attaining the objects of instruction, and it would be equally unjust, as it is foreign to the writer's intention, to confound such men with his censure of this hot bed of empiricism.

Having admired the variety of avocations prosecuted in Surgeons'-Square, and duly reflected on their tendency, if you have a taste for shining in an essay, or sporting through the mazes of debate, there over the way in that snug little two-storied building, labelled the "Royal Medical Society," is the arena where you may realise all your ambitious aspirations. This is an institution, if not of great utility, at least of considerable importance, in Edinburgh. It is the Opera House of the profession; an intellectual fencing establishment, where

our scientific gladiators exhibit their feats once a-week for the amusement and instruction of the public. To the aspiring, it opens a field for distinction; to the idle, an agreeable lounge; to the man of fashion, an appropriate scene for the exhibition of his trappings; and to all, some congenial attractions. Thus formed to all tastes, it draws within the sphere of its fascination a diversity of character, and presents to the looker on a spectacle as changeful as the transformations of the kaleidescope. Whatever, indeed, is rare, eccentric, superficial, profound, and curious in professional life, may be seen displayed at one of its meetings. There is, therefore, no place in our city, where so many of the peculiarities of the profession may be witnessed at a single glance. About eight o'clock in the evening, the individual figures who compose collectively this interesting picture, begin to take their places on the canvass. Each, impressed with the dignity of the station which he is to occupy in the group, comes in full bloom of phrase and apparel. The resources of intellect, and the treasures of the wardrobe, are drawn forth for the occasion; speeches are rehearsed, apparently while arranging the toilet; syllogisms bound while knotting a cravat; and adversaries run through with a witticism, while transfixing a "tommy" with a brilliant. Thus equipped for the contest, the parties enter the theatre of action, which is divided into two principal departments. They are both small, but neatly fitted up; the upper room is allocated for discussion, the lower contains an extensive collection of books. In the centre of the latter stands a table decorated with periodicals, and round it, on evenings of meeting, an assemblage of members and visitors, admitted by cards. Here you may now and then witness, with an elegant wave of the hand and look of critical contempt, the "Yellow Journal" is hurled along the table; see Surgeon Johnstone suspended between the disdainful fingers of a dandy, who lets him down with an exclamation of "'Pon honur, that Johnson's a dam'd bore;" while another shoves aside the "Blue Journal" from him with such a wry physiognomy, as a sick man pushes a cup aside from which he had just drained a draught of senna and salts. From the covered ceiling, a massy candelebra flings its light on the expectant crowd seated on benches, arranged three or four deep from each sidewall, and having an open space in the middle, for the more important characters of the drama. Suspended here and there from the walls, hang in veiled splendour, the portraits of the "Mokannas," of the Edinburgh school, as if too dazzling for mortal vision. In the centre, and opposite the door as you enter, rises the rostrum of the president, with a seat in front, and a table for the reader of the essay for the night. Before Mr. President lies open a huge folio, in whose capacious contents his whole attention seems buried. It is a gentleman of great importance in the community; but I speak of the *genus*, not of the individual. For many years he had been, previously to his present elevation, the readiest speaker in the assembly, and the most bustling member on a committee. No one knew better the exact moment to vociferate "order," or to protest against "irrelevant discussion." He generously devotes his whole time to the duties of his office, and the good of the Society, over which he sheds a lustre by the accomplishments of his mind, and the neatness of his personal appointments. He is a connoisseur in bibliography, a medical Dibdin, who can tell you *stans uno pede*, all the best editions, the eras, and prices of their publication. Meet him at any time of the day, you will find the last "new book," a manuscript "essay," or a copy of "resolutions" in his hand, with the merits of which, though always in extreme haste, he will *bore* you in a cut-and-dry criticism. His seals, which he takes care to exhibit on parting, rise above each other in musical proportion; his signet ring is a fac-simile intaglio of the head of Hippocrates; and his lancet case is the only one of the kind ever manufactured; while his snuff-box typifies the congenial sciences of phrenology and generation. His prospects are equally as high as his various accomplishments, being a particular friend of Sir James Macgregor, and standing well with the Melville interest; but he is not quite certain whether he will continue in the city, or put on the sash and frock, and see the world. Beneath him is the counterpart of the picture, in the reader of the essay. It cost him three months in the composition, and as many quires of paper, to bring it to its present shape; but it is to fix his character as a literary man, and to prepare him for a corresponding contributor to the Blue Journal. The accuracy of his emphasis is quite unimpeachable; and he has carefully consulted Walker on all words of dubious pronunciation. Being listened to with a degree of attention, suited to the display of his powers, for an hour, then comes the discussion conducted through all the varieties of eloquence which the importance of the subject requires, and the capabilities of so many speakers is able to produce, until some "elder" of the assembly rising at one or two o'clock at night, throws his eye on his watch, and puts an end to the debate, by an appeal to his "thirty years experience in the treatment of disease."

SCOTUS.

Edinburgh, April 23, 1827.

THE LANCET.

London, Saturday, May 5, 1827.

THE following thing, we know not what else to call it, was published in *The Times* of Tuesday last; the reader is requested to peruse it with particular attention :—

"TO HIS MAJESTY'S JUDGES, CORONERS, AND JUSTICES OF THE PEACE.

My Lords and Gentlemen,—Some months since I addressed a letter, through the medium of this paper, to the King's Secretary for the Home Department, to caution him against the worldly designs and the injurious practices of men-midwives; and, if I am rightly informed, those statements have been well received by all the disinterested and respectable members of the medical profession. It was to be expected that teachers of man-midwifery, and their adherents, who regard the healing art chiefly for its profits, would become outrageous against the persons who expose their dishonourable vocation, and accordingly they have been liberal in abuse of them, and loud in the praise of their "Diana of the Ephesians;" but few sensible men calculated upon a by-intrigue to persuade the public that the birth of mankind ought to be considered a surgical operation; yet, this absurdity actually disgraces the printed circulars of a College which possesses the unemployed means for taking the highest station in Europe. It is my firm conviction, that the establishment and the further prevalence of man-midwifery, sanctioned as a branch of surgery, would compromise the justice of the country, by exposing the lives of child-bed women and infants to many dangerous and unnecessary secret operations. Under this impression, I should be passively dishonest, if I were to neglect the severe duty of asserting my professional thoughts. Having devoted as much time to the study of the elementary sciences which constitute the only safe foundation for the healing art, as any of my contemporaries; and having, from long-continued meditation and from experience, endeavoured to distinguish the means which help, and those which are hurtful, in the perilous business of surgery, I am free to confess that I view the operations of men-midwives as the most uncertain and the most violent of surgical enterprises. In common with many of the best informed physiologists, I regard the birth of the human race as a purely natural process, most wisely and sufficiently secured by the unerring ordinations of Providence; and I am professionally assured, that it is always mischievous to tamper with pregnant women, under the pretences of hastening, easing, or retarding the most portentous and delicate work of the creation. Man-midwives allege that their interference is 'a consequence of civilization which depraves the natural habits of women,' forgetting the notoriety of a law to compel poor unmarried females to disclose their condition, because the known frequency of its concealment leads to a capital crime; while among the highly-civilized and numberless ladies and women of China and the East Indies, they universally employ ordinary matrons in the sanctuary of child-birth, and would revolt with horror from any proposal to admit the presence of a man. That educated men should submit to be associated with nurses and gossips, for whole days and nights, merely to wait the humiliating events of parturition, is contrary to decency and common sense; man-midwives, therefore, teach their disciples to assume directorial offices, and to be curiously or officiously meddling, under various pretences, by which the terrified and shocked distressed object is rendered obedient; and when the operator's patience begins to fail, or his predictions are at fault, he rushes into the perilous adventure of using his conjectural desperate art; and I confidently believe that the increasing number of deaths to mothers and infants, as well as the pretended difficulties in midwifery, are mainly, if not altogether, imputable to such undue or improper interference. Whenever a degree of violence dangerous to the life of parent or child is meditated, the moral propriety of it should be confided to physicians or hospital surgeons of enlarged intellect. My present purpose is, therefore, to awaken the attention of the legal authorities of this kingdom, and to prepare them for deeds which must arouse the indignation of parties who may suffer from the audacity of young adventurers in surgical midwifery. Even before this innovation, it cannot be denied that many rash surgeons have been hurried by vanity, or from pecuniary necessity, urged to seek premature vulgar fame by attempting unjustifiable operations, trusting that fatal results would be hushed for the sake of the character of the profession; and my own experience in a metropolitan general hospital, where every medical officer is kept in check by rivals, has induced me to hold public consultations in the presence of all the students, in order to prevent questionable enterprises. If such precaution is needful in public practice, what security can we find in the privacy of a lying-in room, where often none but igno-

rant women are present, and where surgical acts of violence may be passed over without inquiry? The public are not aware that the self-constituted teachers of what is now termed "The Obstetric Art and Science," are not any of them general hospital surgeons, or hospital physicians, and their assumed authority to dictate to surgeons' pupils the terms on which they may commit irremediable injuries to women, or destruction to infants, are not sanctioned by law. I do not announce these alarming statements unadvisedly, but from serious apprehensions, awakened by the flippancy with which man-midwives write and speak of sacrificing a child, or wounding the vital parts of a mother. I am aware that the best provided judgment may err, and that there is necessarily much obscurity in the evidence required to decide whether an infant be living or dead during many stages of parturition; for I have witnessed a fatal mistake of this kind under the hands of one of the best informed teachers and practitioners of midwifery, it being discovered, when too late, that the sacrificed infant was alive; and the presumed deformity of the mother, which was alleged as the justification, was equally disproved, by her bearing five children afterwards without the help of art or surgical instruments. If, therefore, the highest authorities in man-midwifery are liable to such fatal mistakes, what frightful consequence may we not anticipate from a half-privileged class of young surgical adventurers? The wise laws of our country are most tenacious about the protection of human life, and your Lordships, the Coroners, and Magistrates, are properly jealous of any screening evidence intended to gloss over acts of atrocity. I, therefore, most respectfully submit, that whenever cases of violent death occur to mother or infant, from the use of surgical instruments or surgical hands, a coroner's inquest should be holden, and if sufficient proofs are adduced of hasty violence, or of rashness, the affair should be investigated before a jury, and a chief reliance placed upon the opinions of some grave disinterested physician, or experienced hospital surgeon, they being persons the best qualified to understand the intricate hinges of life or death, and to determine how far it may be ever expedient under given circumstances, to hazard the life of a mother or that of her progeny. If, however (as I professionally believe), those terrible violences are very rarely justifiable, and that experienced matrons are the competent and most proper assistants to lying-in women, it only remains to suggest a remedy for the humiliations, indecencies, and mischiefs, which attend surgical male midwifery. I, therefore, now propose, the restoration of the practice of midwifery to females, beginning with the introduction of the wives, widows, or female kindred, of medical practitioners, by which every surgeon or apothecary may secure his female patients against the inroads of his competitors, and establish a respectable maintenance for such female, in the event of his permature death, while his consequent freedom from unnecessary confinement among gossips will allow him more time to follow his proper vocations.

To avert one probable objection against the immediate practicability of instructing a sufficient number of women to become midwives, I have to notify that there is a Lying-in Hospital situate in Brownlow-street, Long Acre, where females are taught midwifery; but if, from the inattention of the Governors or through the craft of man-midwives, this design is perverted, then the Governors or the Court of Chancery ought to rectify such abuses.

My Lords and Gentlemen,
your obedient servant,

ANTHONY CARLISLE."

6, Langham-place, April 23.

It is certainly desirable that all subjects connected with science should be discussed in the calm and dignified language of philosophy; but when an insignificant portion of argument is made the vehicle of an overwhelming quantity of abuse, and the most horrid imputations on the characters, professional and private, of a most useful and meritorious class of gentlemen, moderation in repelling the atrocious attack would be a sacrifice of principle; and tameness, negative criminality. Without hesitation, then, we denounce the above *thing* as a most villanous and unfounded calumny, not only on the professional character of GENERAL PRACTITIONERS, but also on the moral reputation of the ladies of England. We can scarcely believe that it is not a forgery; for who can imagine that any man possessing common sense, and *some* professional reputation, should avow himself as the author of such unheard of lies, and such an unparalleled attack on the rights and privileges of his professional brethren. We really feel too indignant to enter at this time upon any serious discussion of the subject; but in our next Number, however, after having cooled

a little, we will reply to the braying of this most egregious and conceited ass, and if we mistake not, exhibit his ears at their full length.

Dr. Birkbeck commenced his Lectures at the Mechanics' Institution on Friday last; it was a most heterogeneous discourse, and did not at all reach our anticipations. It is useless to *talk* to mechanics, unless they are at the same time *shown* some dissected portion of the human body.

The patients of St. George's Hospital have ample cause of gratulation from the resignation of the office of Surgeon by Sir Everard Home, but we much fear that the satisfaction from this cause will be of short duration, as we apprehend that the loss of one calamity is only a prelude to the infliction of a worse. The elections at this hospital, during many years past, have been of such a character as to belie the benevolence of its governors. Is it an act of kindness to erect an institution for the reception of the sick, under the pretence of relieving their ailments, and then to appoint individuals to act as the chief officers whose ignorance is the only quality by which they are recognised in scientific society? We ask the Governors this simple question, Do they think it safe to intrust their lives to those medical officers whom they select for the patients of their hospital? if not, in what does their anxiety for the welfare of the diseased poor exhibit itself? But we are really tired of appealing to the Governors of public charities, as we are firmly persuaded that the gratification of a benevolent feeling in the subscribers to such institutions bears no proportion to the satisfaction of a most despicable vanity, arising from the ostentatious display of an advertised benefactor. If the Governors, by holding out allurements to the sick, cause the unfortunate beings to to enter their institution, surely it is not well done to stop in the work of charity at that moment when its real utility ought to commence. What are your splendid buildings, spacious wards, ornamented corridors, attentive nurses, and a bounteous supply of wholesome food, unless accompanied with SKILFUL MEDICAL OFFICERS, without whom no substantial benefit can be conferred, and from whose absence the most horrid spectacles and shameful atrocities are continually presented to our tortured senses. If the governors of hospitals were conscious of the calamities which result from their apathy, or rather from the total disregard of all consideration of the talents of those whom they elect as their medical officers, we cannot believe that they are so brutalized, so lost to every humane feeling, as to persevere in a course of such iniquitous indifference. That these elections should be governed by the voice of the profession, through the President or Council of a well organised college, there can be no doubt; but in its absence the Governors might find some guide to their judgment in a public examination of the candidates, conducted in their presence, similar to the *Concours* of the *Agregé* at the *Academy of Medicine* of Paris. At the last election of Surgeon to this Hospital, Mr. Sleigh challenged his opponents to a public examination, which was refused! but ought it to have been refused by the Governors? Mr. Sleigh is, we observe, a candidate on the present occasion, as are Messrs. Rose, and Cæsar Hawkins; Mr. Bennett has also offered himself, a gentleman whose talents would do honour to that or any other similar institution in Europe. Mr. Cæsar Hawkins in his public address acknowledges the "*superior claims*" of Mr. Rose, and we have only to hope that the Governors are as well acquainted with those "superior claims" as we are, and in that case we are assured that the patients will have the happiness of being spared the benefits

which they are so well calculated to bestow. Those "superior claims" discovered the intestine "running up" in the *post mortem* dissection of poor MARY BARNETT, and doubtless similar "superior claims" directed "*frequent operations* on enlarged glands in mistake for strangulated hernia," and prescribed bandages in the cases of poor HAMMOND and WHEELER.

The Governors are now called upon to discharge a most important and solemn duty, and if they discard every consideration other than the talents of the candidates, they will execute it in a manner honourable to themselves and beneficial to the country.

The Anatomy of Drunkenness. By ROBERT MACNISH, Member of the Glasgow Medical Society. 8vo. pp. 56. Glasgow, 1827. W. R. Mac Phun.

WITHOUT doubt there is nothing graceful in drunkenness, yet the path leading to it is strewed with flowers more alluring than the spells of Medea or Circe. A man does not *wine*, as the phrase goes, with a fixed resolution of pushing it to intoxication; but having broached the loved liquor, had one draught of the delicious beverage, the glass passes merrily round; time, and space, and every ill, are forgotten in the elysium of the moment, till the enchantment which beclouds the reason of its victim has deprived him also of the use of his senses. He falls into a lethargic slumber, after having acted the worst parts of a fool, leaving to nature the task of restoring him his reason and of repairing the other mischiefs which his cups have brought him. This, however, is your toper, *par excellence*—the downright drunkard; but others are more prudent, in falling short of the beastly part of the diversion, and these are precisely the men, free livers as they are called, who, in the long run, will sustain the greater injury both in pocket and person. The term drunkenness, we have reason to think, is more applicable to the condition of mechanics, who can rarely indulge their propensities more than one day of the week, and therefore make the most of it, while the man whose inclination leads him to drink a certain quantity *per diem*, which obvious reasons prevent him from exceeding, only takes what his system has been wedded to, and consequently is able to bear—what, indeed, it expects, so to speak, and which cannot, with much show of wisdom, be suddenly withheld. The man who has drunk *ad nauseam*, once a week for a twelvemonth, may, with much benefit, certainly without injury, abandon his pernicious practice at once; but he who has taken his daily bottle cannot, with impunity, so soon alter his habits; it must be done by degrees. Dr. Pitcairn, of Edinburgh, treated a drunkard, a highland chieftain, in this manner. He gave him no medicines, and only exacted a promise of him that he would every day put as much wax into his *queich* of whisky as would receive the impression of his arms. The wax of course gradually increased till it filled the queich, and the man was thus gradually deprived of his whisky and cured of his bad habits. We know that less attentive observers of nature have done the greatest of all possible injuries by following an opposite course—men, too, whose education should have taught them better. Not that we assert that immediately to withhold all such supplies may not, now and then, be especially indicated; but with aged people we have seen few cases in which such a practice has been useful, and many in which it has been baneful. An habitual diffusible stimulus cannot, in such cases, be withdrawn, unless a permanent one supplies its place; and, all at once, what stomach in the state of atony, which the use of spirits produces, can take or digest a quantity of food equal in effect to the accustomed, but now prohibited stimulus; or what constitution, not of its pristine vigour, can accommodate itself to such imperative

changes? Every experienced toper knows well enough, that to overcome the effects of yesterday's debauch, he must take at least a glass to-day. Brown pretended to explain the reason of this; whether he succeeded, is hardly now the question; he certainly stated some wholesome truths, and that is sufficient. In the words of that author, the dram-drinkers know how to bring themselves back to their healthy excitement; they know the remedy, but they know not its bounds. They have recourse to a glass of strong spirit, and they would be right if they stopped at one, two, or a very few, according to the quantity that their former habit may render necessary, and take no more than what gave them an appetite for solid, nourishing, animal food, which, whatever the quantity required to produce it be, is the best general rule; but they go on, and every day, till that of their death, renew the disease."

Here Brown called experience to the aid of his theory, without inflecting it. And who, whose appetite has gone off, as they say, whose stomach has fallen into a state of torpor, by fatigue and a postponed dinner-hour, has not felt the truth of his remarks? But this is foreign to our subject.

Wine, moderately taken, invigorates both the mind and the body, banishes cowardice, and inspires men with courage and alacrity. According to some writers, the Greeks owed much of their excellence in arts and arms to the superiority of their wines; and lost at once their genius and reputation with the destruction of their vines. The idea is far from being fanciful; for doubtless the brain is differently affected by different liquors, although the base, or the spirituous part of them, be the same. A man who makes brandy his drink, shall, after a time, take a certain quantity with impunity, and yet be drunk on taking a similar quantity of rum.—Parsimonious topers are aware of this; they are in the habit of changing their liquors, for by doing so, they attain their wishes at the least expense. Spirits, however, are detestable gear. Drunkenness, and all the ills which follow in its train, have wonderfully increased since the Arabians discovered the alembic, and the method of distilling them, though at first they were used principally in the making of tinctures. Raymond Lilly remarks, that spirits were unknown in Europe at the commencement of the fourteenth century; but the distillation of spirit from *fermented grain*, is attributed to Arnold de Villa Nova, about the year 1315. Soon after this time, brandy was made in Sicily (first from spoiled grapes,) and very early became an article of extensive commerce at Venice. Since that period spirits have been made with less trouble and expense, and have carried disease and misery, and desolation into every part of the world that has admitted them. The savages of America have been taught the sorrow-bringing and depopulating use of spirits, as if the *civilized* world were determined to dispossess them of their lands and their freedom, not by the manly toils of war, but by proffering them the poisonous chalice of insidious peace. As destroyers of mankind, the discoverer of gunpowder and of spirits are pretty nearly entitled to the same demerit; neither, that we can see, deserves the preference. The use of spirits, and especially of gin, has increased to a frightful extent, and is fast sapping the morals and constitutions of the lower orders, both males and females. We could write a volume upon this subject, but enough has been said for our present purpose. It is much to be regretted, that spirits were not discovered, as it turns out, before the christian æra, since the writers of the New Testament would doubtless have prohibited their use, as Mahomet, who lived afterwards, found it necessary to do. His religion was policy, and had he prohibited the use of opium he would have rendered it complete. It is true that drunkenness is contrary to the Christian's duty; tempe-

rance is inculcated, but nothing is denied him; the path, therefore, to drunkenness is open, and we know that the flesh is weak. Gluttony is the parson's vice, and the antithesis to drunkenness; hence Paul recommends wine for a complaint of the stomach, (1 Tim. 23.) after Hippocrates, (Sect. 6, aph. 21,) who had laid down the very rational practice in *fames canina*, for it is well known that great eaters are rarely great drinkers.

During the most intellectual, if not the most courageous periods of their history, the Greeks and Romans lived mostly on vegetables. Ceres was a great divinity among them; nor were they less fondly attached to Bacchus. To wine their poets owed some of their loftiest flights, and they were loud in its praises. The superiority of the gods was attributed to the richness of the fabled nectar over the wines of mortals. Cato, the rigid censor, we are told, often warmed his virtue by wine. Nor shall we decry thee, Ancient Bacchus! but rather may we live long to address thee in the language of Horace to his cask:—

Te Liber, et, si læta aderit, Venus,
Segnesque nodum solvere Gratiæ,
Vivæque producent lucernæ,
Dum rediens fugat astra Phœbus.

Sed modus est in rebus; and with these remarks we proceed to the anatomy of drunkenness. Some authors have spoken of the pleasure of being completely drunk. The most exquisite period, however, is when a person is neither "drunken nor sober," as Bishop Andrews says in his "Ex—ale—tation of ale," when the ætherial emanations begin to float around the brain; when the mind is beginning to expand its wings, and rise from earth; when the tongue feels itself somewhat loosened in the mouth, and breaks the previous taciturnity, if any such existed. No man in this state of mind ever committed suicide.

According to Mr. Macnish, who seems to have instituted a set of convivial experiments to ascertain the point, the symptoms of drunkenness succeed each other in the following order:—

"First, an unusual serenity prevails over the mind, and the soul of the votary is filled with a placid satisfaction. By degrees he is sensible of a soft and not unmusical humming in his ears, at every pause of the conversation. He seems, to himself, to wear his head lighter than usual upon his shoulders. Then a species of obscurity, thinner than the finest mist, passes before his eyes, and makes him see objects rather indistinctly. The lights begin to dance, and appear double. A gaiety and warmth are felt at the same time about the heart. The imagination is expanded, and filled with a thousand delightful images. He becomes loquacious, and pours forth, in enthusiastic language, the thoughts which are born, as it were, within him.

"Now comes a spirit of universal contentment with himself and all the world. He thinks no more of misery: it is dissolved in the bliss of the moment. This is the acme of the fit—the ecstacy is now perfect. As yet the sensorium is in tolerable order: it is only shaken, but the capability of thinking with accuracy still remains. About this time, the drunkard pours out all the secrets of his soul. His qualities, good or bad, come forth without reserve; and now, if at any time, the human heart may be seen into. In a short period, he is seized with a most inordinate propensity to talk nonsense, though he is perfectly conscious of doing so. He also commits many foolish things, knowing them to be foolish. The power of volition, that faculty which keeps the will subordinate to the judgment, seems totally weakened. The most delightful time seems to be that immediately before becoming very talkative. When this takes place, a man turns ridiculous, and his mirth, though more boisterous, is not so exquisite. At first, the intoxication partakes of sentiment, but, latterly, it becomes merely animal.

"After this the scene thickens. The drunkard's imagination gets disordered with the most grotesque conceptions. Instead of moderating his drink, he pours it down more rapidly than ever: glass follows glass with reckless energy. His head becomes perfectly giddy. The candles burn blue, or green, or yellow; and where there are perhaps only three on the table, he sees a dozen. According to his temperament, he is amorous, or musical, or quarrelsome.—Many possess a most extraordinary wit; and a great flow of spirits is a general attendant. In the latter stages, the speech is thick, and the use of the tongue in a great measure lost. His mouth is half open, and

idiotic in the expression; while his eyes are glazed, wavering, and watery. He is apt to fancy that he has offended some one of the company, and is ridiculously profuse with his apologies. Frequently he mistakes one person for another, and imagines that some of those before him are individuals who are, in reality, absent or even dead. The muscular powers are, all along, much affected: this, indeed, happens before any great change takes place in the mind, and goes on progressively increasing. He can no longer walk with steadiness, but totters from side to side. The limbs become powerless, and inadequate to sustain his weight. He is, however, not always sensible of any deficiency in this respect: and, while exciting mirth by his eccentric motions, imagines that he walks with the most perfect steadiness. In attempting to run, he conceives that he passes over the ground with astonishing rapidity. The last stage of drunkenness is total insensibility. The man tumbles perhaps beneath the table, and is carried away in a state of stupor to his couch. In this condition he is said to be *dead drunk*.

"When the drunkard is put to bed, let us suppose that his faculties are not totally absorbed in apoplectic stupor; let us suppose that he still possesses consciousness and feeling, though these are both disordered; then begins "the tug of war;" then comes the misery which is doomed to succeed his previous raptures. No sooner is his head laid upon the pillow than it is seized with the strangest throbbing. His heart beats quick and hard against the ribs. A noise like the distant fall of a cascade, or rushing of a river, is heard in his ears.—Sough—sough—sough, goes the sound. His senses now become more drowned and stupified. A dim recollection of his carousals, like a shadowy and indistinct dream, passes before the mind. He still hears, as in echo, the cries and laughter of his companions. Wild fantastic fancies accumulate thickly around the brain. His giddiness is greater than ever; and he feels as if in a ship tossed upon a heaving sea. At last he drops insensibly into a profound slumber."

We cannot speak of the latter act of the comedy—the being put to bed—the sough, sough, sough-going sound, &c., from any experience of our own; but we confess that we recognise, in the earlier scenes, some of our youthful sensations. But we apprehend these sensations must vary considerably with the liquor drank, with its quality, and with the temperaments of the individuals composing the social party. When Ben Jonson took bad wine at the Devil Tavern, he complained that he spoiled his plays, and *vice versa*; we suppose, therefore, that the acting of the topers will much depend upon the quality of the "invisible spirit of wine" which they put into their mouths.

The corporeal manifestations of drunkenness vary not less than the mental, with the liquor employed. The drunkard, from ardent spirits, is generally a poor miserable cachectic body, broken alike in mind and fortune; but the votary of Bacchus usually reminds us of the "cheerful look," the "pleasing carriage," and the "paunch with capon lined," of the sac-loving and witty Falstaff. The drunkenness of ale is peculiarly British, and most commonly observed in innkeepers and their double chinned wives, beadles, butchers, and porters. It is the least intellectual, though, probably, the most harmless way of stealing away the brains, and seems to be the connecting link of drunkenness with gluttony, which is the grossest and most beastly amusement of the whole.

If we except the oxide of nitrogen, the effects of which are so momentary as not to require a notice in this place, art has only furnished one inebriant, while nature abounds with them. Dr. Johnson, abandoning wine, found his solace in tea. Fontanelle and Voltaire were excited by coffee; Newton and Hobbes by tobacco; Demosthenes and Haller by copious draughts of water. The natural products which are used by different nations, for the purpose of producing that state of inebriety which among us is effected by wine or spirits, are enumerated in the Amenitates Academicæ, Vol. VI, in the following order:—

1. *Opium*, in use all over the East, and of which the Turks, through custom, swallow as much as a drachm at a time; 2. *Peganum harmala*, or Syrian rue, the seeds of which are sold in Turkey for this purpose; and with these, (as Bellonius asserts,) the Otto-

man Emperor Solyman kept himself intoxicated; 3. *Baslac*, of the Turks, or *bangue*, of the Persians, prepared from the dust of the male flower of the hemp, or from the leaves; 4. *Bangue*, of the Indians, from the leaves of *hibiscus sadarissa*;* 5. Seeds of various species of datura, or thorn-apple; 6. *Pinang*, or betle, of the Indians; 7. Roots of *hyoscyamus niger*; 8. *Hyoscyamus physaloides*; 9. Berries of the deadly-night-shade, (*atropa belladonna*;) 10. Leaves of millefoil, (achillea mille folium,) used by the inhabitants of the province of Dalarne, to render their beer intoxicating; 11. *Tobacco*, and several others less powerful, as clary, saffron, and darnel, the last of which, and the berries of the *menispermum cocculus* of Linnè, are said to be much employed by brewers. The authors of the Medical Botany, now publishing, observed a *field* of darnel in the neighbourhood of London, doubtless for the use of ale-brewers, or of those persons who make it their business to supply publicans with certain deleterious materials, which being mixed with water, convert two butts of beer into three. A person well versed in this craft, is called "a good cellar man!"

In England, almost every person can procure the means of intemperance; but it is obvious that the poorer classes will prefer the liquor which gives them the greatest amount of inebriety at the least expense; and as drunkenness from wholesome beer is confessedly less injurious than the same from ardent spirits, it should be the policy of government to impose a heavy duty on the one, and to lighten the price of the other. The tax upon beer is unjust and demoralizing. It has thrown the trade of brewing into the hands of monopolists, and produced or favoured the baneful habit of dram drinking which among the lower orders, especially of females, is increasing to an extent hardly to be credited by inattentive observers of their actions. Witness the number of expensive shops lately fitted up and opened for the sale of gin, and the crowds resorting to them; and some idea may be formed of the extent of this growing evil, the ravages of which are already depicted on the countenances of more than half of the lower orders of the metropolis. Among the higher classes, intemperance is in the wane; principally, because they have turned their attention to the luxuries of cookery; but whether much positive good has been gained by the transition, remains to be seen.

We did not design to enter into the pathology of drunkenness; and having observed that the pamphlet of Mr. Macnish is a brief, but, as far as it goes, a judicious performance, likely to interest the general reader, we have done.

* The medicine, commonly called nepenthes, which is so highly extolled by Homer, Od. Δ 220, was probably derived from this plant. Diodorus Siculus, lib. 1, calls it ὀργῆς καὶ λύπης φάρμακον, "a remedy for anger and sorrow;" and Homer says, that *Helen* received it in Egypt from Polydamna, the wife of Themis. Diodorus illustrates this place of the poet, and assures us that the women of Egyptian Thebes, called also Diospolis, were possessed of the remedy in his time, though there seems to be no good reason for calling it nepenthes. The Indians make use of it, whenever they are inclined to be merry, or indulge in their amours.

Two Introductory Lectures on Materia Medica, delivered at the opening of the Course, and at the commencement of the Vegetable Materia Medica, at Mr. Grainger's Theatre, Webb-street, Borough, and at the New Medical School, Little Dean-street, Soho. By Francis Bootт, M.D. 8vo. pp. 70; London, 1827; S. Highley.

Nothing has tended so much to raise the reputation of deserving teachers, and to cast merited contempt on the undeserving, as the practice of publishing lectures; a practice begun by ourselves, amidst much re-

proach, opposition, and detraction, but which is now allowed, by all who have sense or candour enough to know or acknowledge any thing, to have produced incalculable benefits. In our early days, "the greatest repute in medicine afforded not the slightest presumption of superior skilfulness." The fortunate sons of Æsculapius were usually wary enough not to expose themselves to criticism; now, however, reputation cannot be inherited, or married, or gained in any other way than by the suffrages of the public, who will decide upon the merits of individuals, without being prejudiced by circumstances, or objects foreign to them. Where the basis of a man's reputation does not appear, it will be concluded not to exist; and no one will be able to raise himself to eminence who has not done something to merit it. Family alliances, or fortuitous circumstances, may gain a man a tolerable practice for a period; but he who wishes to secure a reputation, must begin by showing the world that he deserves it. The arena is open to all, and those who do not avail themselves of the opportunity afforded them, must be presumed to be unequal to the conflict. If a man even publish a stupid book, he will be benefited by the warning which he will receive at the outset of his career, and take to some other employment, instead of indulging himself in expectations never to be realized. Of course we speak only of *teachers*, who henceforward, when competition shall be stronger than it is at present, will be the most fortunate of men, if they gain a reputation or a living, however much extrinsic circumstances may favour them, unless they can convince their pupils and the public that they are well qualified for the difficult service of education. This, we think, may be better done by a sort of syllabus of the subjects to be taught, accompanied with an outline of the arguments meant to be pursued, than by what are called introductory lectures, which are generally a mere collection of dates and things so general and incongruous, as to be of very little service. By publishing his lectures, Dr. Boott has given the profession an opportunity of forming some opinion of his manners and merits, which to that tribunal may be very safely confided.

Conversations on Anatomy, Physiology, and Surgery. By Archibald Robertson, M.D., Lecturer on the Practice of Physic, &c. 12mo., pp. 446; Buchanan, Edinburgh, and Highley, London, 1827.

Dr. Robertson is extremely fond of the colloquial method of instruction, without being aware of the particular difficulty of bringing out a direct answer to a question propounded, and the manifest absurdity and circumlocution of an indirect one. The first question which we stumbled upon, and which will serve to illustrate our meaning, was the following (page 312):—

"*Q.* What organic derangements is the internal surface of the stomach and intestines subject to in common?

A. Their internal surface is frequently seized with inflammation, ulceration, scirrhus, cancer, tumour, papillæ, and pustules, apthæ, spasm, stricture, and calculi."

The construction of the question is ridiculous, and the answer for the most part absurd; the use of the word *seize* particularly so. A man is said to be seized of an estate, but we never yet heard of the internal surface of the bladder being "*seized* with calculi;" spasm and stricture too are not necessarily organic derangements in the usually accepted meaning of the term; and all the words in italics are superfluous. Again, page 188 being opened by chance,

"*Q.* What forms the *linea transversa*?

A. These are three, or sometimes four in number," &c.;

which is not an answer to the question. Lastly, without seeking it, we have the following question, p. 212:—

"*Q.* By what means are the over-stretched muscles (about the hip joint) to be relaxed?

A. Of these muscles six are situated," &c.

It is not our duty to recommend so illogical a production, unless it be to the grinders of Edinburgh, for whom we suppose it to be intended, and of whose capacities and wants we will allow the author to be the better judge.

A General Table of Atomic Numbers, or Chemical Equivalents, to which is added a Table of Pharmaceutical Equivalents, and an Introduction to the Atomic Theory. For the use of Students. 18mo. pp. 36. London, 1827. Anderson.

This little work will be of great assistance to the student of chemistry, which owes all its philosophy to the theory of equivalents, first broached by Richter, Higgins, and Dalton, and so much extended and improved by Wollaston, Thomson, and Davy. The author of the present performance, has multiplied Dr. Thomson's scale by eight, thus substituting whole numbers for decimals, which are apt to impede the progress of beginners.

NEW MEDICAL SCHOOL,

Aldersgate Street.

To the Editor of The Lancet.

Sir,—In the Number of The Lancet published on the 21st of April, I am included in the advertisement of the New Medical School, as about to give lectures on "*Medical* Botany;" in the last Number, the word *Medical* has been intentionally withdrawn, and without my consent having been asked. Now, as I did not intend to give lectures on botany, otherwise than as connected with medicine, I beg leave, through the medium of your pages, to decline altogether giving lectures at the New Medical School, and subscribe myself,

Sir, yours truly,
James Woodforde.

3, Bouverie Street, April 30, 1827.

HOSPITAL REPORTS.

GUY'S HOSPITAL.

Case of Hydrophobia, occurring seven weeks subsequently to the bite of a dog on the left hand.—Amputation of the arm, after the accession of the disease.

A case of that dreadful malady, hydrophobia, was admitted into Guy's Hospital during the past week, and it has excited much attention on account of the very extraordinary plan of treatment had recourse to, which consisted in amputating the left arm above the elbow; the left hand having been bitten upwards of seven weeks previously, *the patient at the time of the operation labouring under the disease to its full extent.*

The subject of this horrible disease was a fine stout young man, 17 years of age, and residing at Newington-Butts; he was brought to the hospital about 12 o'clock at noon, on Thursday, April 19, and was placed in Job's Ward under the *nominal* care of Mr. Morgan. That gentleman, however, being from home, the attendance upon the case devolved on Mr. Callaway, the assistant surgeon.

The symptoms of hydrophobia, it was stated, had been fully manifest since the preceding morning; a period of about 30 hours had elapsed since the symptoms had unequivocally presented themselves. There was head-ache, languor, and sickness felt on the Tuesday evening, but not to any great degree, as the poor fellow visited the theatre on the same evening. He had been seen by Dr. Walshman, who prescribed some antispasmodic medicine, which, however, was not taken, on account of the patient's inability to swallow. The friends who accompanied the poor man to the hospital stated that, about seven weeks previously, he was severely bitten in the left hand by a dog, which was running along the street or road with great speed; the young man attempted to rescue some children against whom the dog was about to rush, when the animal flew at him, bit his left hand very much, and then escaped. No subsequent information was obtained of the dog. The wounds bled freely, they were dressed simply, (no attempt being made at excision or cauterization,) and in the course of a fortnight they were healed, no inconvenience being experienced afterwards.

At the time of admission into the hospital, there was observed on the back of the left hand an irregular scar; one portion of the cicatrix was much more elevated than the remainder, and it had a shining appearance as if a fluid were contained in it.

This, however, was deceptive, as was proved by puncturing the part with a lancet. The constitutional symptoms were those characteristic of hydrophobia in the highest degree; the aversion or dread of fluids was particularly manifest, and the agitation and distress excited in the few attempts which were made to swallow liquids were truly horrible. The respiratory function was very much disturbed, the breathing being short and exceedingly laborious; the pulse was innumerably rapid. Mr. Callaway stated it at one period to be 160. The convulsive paroxysms were very frequent, but during the intervals the intellectual functions were not in the least affected, the poor fellow readily and rationally answering questions proposed to him. His countenance bore a strong expression of terror, and there was a copious discharge of frothy saliva from the mouth. The sound of a fluid being poured into a vessel brought on a most violent paroxysm. An attempt was made to administer some liquid in a covered vessel, that the patient might not see it, but no sooner had the vessel touched his lips than he dashed it from him, and his whole frame became agitated with the most dreadful convulsions. He appeared to gasp or struggle for breath, and upon the whole, at this period, presented one of the most appalling sights that can well be conceived.

The medical and surgical officers, having consulted together on the plan of treatment proper to be adopted, came at length to *the determination of amputating the limb on which the wound from the dog had been inflicted!!* (We were not able to learn what reasons were assigned for this mode of procedure, or whether it was *purely* an experiment, adopted without one solitary rational ground or hope of success.) The operation was performed by Mr. Callaway, about 2 o'clock in the afternoon; a large quantity of blood was lost, and the paroxysms during the performance of the operation were extremely violent. The great loss of blood appeared so far to lower the powers of the system, that for some time afterwards the convulsive paroxysms were less severe. But in a short time a kind of re-action seemed to take place, and the convulsions increased in duration as well as violence. The poor fellow continued in this state until about eight o'clock in the evening, when death closed the melancholy scene. The only further means had recourse to consisted in the exhibition of two purgative clysters, and one containing half a drachm of the extract of belladonna. A portion of the extract was also well rubbed in over the pit of the stomach; no apparent effect was produced by this medicine. The pupil (as we omitted to state) was dilated throughout the whole of the disease. A careful examination of the parts under the tongue was made, with a view of discovering the pustules said to be formed in this disease, at the orifices of the submaxillary ducts; no such appearance, however, was found.

Post-Mortem Examination.

The dissection was conducted by Dr. Hodgkin, sixteen hours after the decease of the patient, and the body was removed into the medical theatre, in order to afford a favourable opportunity for demonstration to a large class of pupils who had assembled on the occasion. The case had excited an intense interest, and we observed many general practitioners present.

Head.—The membranes of the brain were perfectly free from any appearance of disease; the vessels of the pia mater not fuller than ordinary. The substance of the cerebrum, to the lateral ventricles, was healthy; there was rather more than the usual quantity of serum in the ventricles, and on the right plexus choroides was a tubercle of the size of a split pea, which was firm to the touch. There was said to be a slight increase of vascularity on the right side in the cineritious part of the medulla oblongata, and it was also stated to be perceptible on the same side of the medulla spinalis throughout its whole extent. The spinal envelopes were natural, as was also the brain below the ventricles. The *optic thalami* (to the great consternation of Mr. Key,) were quite sound; they had not even a "*roseate hue.*"

Thorax.—The lungs on both sides were emphysematous; the pleura pulmonalis was seen distinctly raised into transparent vesicles on the surface of the lungs. This appearance was observed in patches. The cellular membrane covering the diaphragm was emphysematous, and a portion was handed round which showed the extravasation of air in a remarkable degree.* The lungs were loaded with blood, and the bronchial passages filled with a frothy fluid. The heart was perfectly healthy.

The upper part of the pharynx was pale, as was also the lining membrane of the œsophagus, throughout its whole extent; there was a slight extent of increased vascularity in the mucous membrane of the

* Emphysema of the substance of the lungs, and also of the surfaces under the pleura pulmonalis, have been noticed by various writers as morbid appearances occasionally found in persons dying of hydrophobia, and it is not improperly conjectured that the emphysema is occasioned by the rupture of one or more of the air cells, in the convulsive efforts of respiration, which so strikingly characterise this disease.

stomach, at a short distance from the cardiac orifice. The lower part of the trachea when about to bifurcate, exhibited preternatural vascularity; the remaining portion, with the larynx, were natural in appearance. There was no disease discovered in the abdominal or pelvic viscera.

ST. BARTHOLOMEW'S HOSPITAL.

SYPHILITIC INFLAMMATION OF THE SKIN OF THE HAND, WITH INFLAMED ABSORBENT GLANDS AND PAPULAR ERUPTIONS.

John Callow, æt. 20, was admitted under the care of Mr. Lawrence, on the 2nd of February. He stated, that about the beginning of May, 1826, he was bled for a pain in the head, but previous to that had enjoyed good general health. About a fortnight afterwards he contracted a sore on the prepuce, followed by a bubo, for which pills were taken and ointment rubbed in. The mouth became sore, continued so for about four days, and in less than a month the sore and bubo disappeared. Three weeks after this disappearance, a papular eruption coming out over the whole body, he was made an out-patient under Mr. Vincent, took pills and diet drink, and the eruption disappeared. Three weeks after, the back and ulnar side of the left hand became inflamed, considerably swelled, bright, and indurated. It slowly became softer at the most prominent part, without diminution of the swelling and redness, and then broke by two or three small apertures, from which a thin, scanty, watery discharge took place. The inflammation on the back of the hand was soon succeeded by a small induration immediately under the skin. On the inner side of the forearm, in the course of the vessels on the inner side of the biceps muscle, in the axilla, there was detected an elongated, irregular, glandular hardness, about the size of a pigeon's egg. The indurations on the arm and forearm were painful on pressure; the arm exhibited an inflamed chain of absorbent glands; the forearm resembled an inflamed forearm from punctured vein. A fortnight previous to admission the papular eruption again appeared over the whole body, the papulæ being in some parts clustered, but in general single; they suppurated imperfectly, and then dried up, the hand having been leeched and poulticed with relief.

Feb. 2. The situation of the chancre was marked by a large cicatrix on the prepuce, which showed there had been considerable loss of substance. The induration and swelling of the forearm, arm, and axilla, were exactly as described above. The papulæ were in various stages, some dying, and others of recent origin; pulse quick, tongue clean. Took a dose of calomel and jalap immediately, and the saline mixture, with vinum antimon. ʒss. sextis horis; and applied linseed poultice to the hand.

4. Twelve leeches applied to the indurated parts of the forearm.

6. A full and strong pulse, with pain in the head, and restlessness at night. V.S. ad ʒxvj.; blood buffed and cupped.

7. Considerably relieved by the loss of blood; continued the saline medicine, with the antimony.

8. Twelve leeches to the arm and forearm.

13. Pulse full and strong; V.S. to ʒxii.; blood much buffed and cupped; the patient felt better after bleeding.

15. A few pustules appeared on the forearm; pulse full, strong, 90. V.S. ad ʒxvj.; blood much buffed and cupped.

17. Much relieved by the bleeding; no feverish symptoms; took half a grain of oxymuriate of mercury in a pint of decoct. sarsæ. quotidie.

20. Hand and arm very painful; extract conii gr. v. ter quotidie. Omitted the oxmuriate and sarsaparilla.

22. Pain much diminished. Omitted the conium, and resumed the oxymuriate and sarsaparilla.

This plan of treatment was pursued with little variation up to the 18th of March, at which time the patient appeared much the same in every respect. The hand presenting the same indolent appearance, a blister of the size of a crown piece was applied.

March 27. A great degree of irritation had arisen from the application of the blister; the induration on the forearm had extended, and was more painful; the glandular swelling in the axilla had enlarged; eight leeches were applied to the forearm.

29. Pain and induration in the forearm much the same; the leeches repeated.

30. Felt much relieved by the leeches; they were repeated.

31. A fluctuation being perceived in the tumour in the axilla, it was punctured, and about a dessert spoonful of thick matter discharged.

April 6. Ordered the warm bath three times a-day.

8—10. Leeches repeated.

15. Patient feverish, and hand painful; took the saline mixture with antimony.

17. The induration in the arm and axilla much diminished. Suppuration having taken place beneath the palmar fascia, a puncture was made, and a small quantity of matter let out, with great relief to the patient; took five grains of the soap and opium pill every night.

19. It being the wish of the patient to

go into the country, as he conceived his health would be thereby re-established, he this day left the Hospital with considerable relief to his suffering, and great amendment to his general health.

INFLAMMATION OF THE CHEST, WITH PHLEBITIS, AFTER VENESECTION.

John Car, ætat. 47, states that about a week since, while removing a door, he strained his back, which gave him considerable pain. He continued working until yesterday, (Feb. 27,) when finding that he got worse, he came to the Hospital, and was bled to ℥xiv. with great relief.

To day, March 2, he returned on account of pain in the wound, and inflammation of the surrounding cellular tissue; the countenance was pale and anxious, he had pain in the chest, which increased on taking a full inspiration, and his pulse was full, hard, and frequent; he was at once taken into the Hospital. Thirty leeches were applied to the inflamed part, and afterwards a bread and water poultice; half an ounce of the liquor antimonii tart. immediately, and to be repeated every four hours.

3. He passed a restless night, with very little sleep; four doses of the antimony have been taken without any sensible operation; the arm is easier; pulse full, hard, and 116; tongue white; bowels freely open; venesection to ℥xx.; a dose of calomel and jalap immediately, and the antimony continued as before; he fainted during the bleeding; the blood was much buffed, and the crassamentum very tough.

4. Appears rather better to-day, but as the pulse was full, hard, and upwards of an hundred, he was bled ad deliquium; fainting supervened when ℥xx. had flowed; the blood was highly cupped and buffed, the serum possessing a milky appearance. In the evening he breathed easier, and the arm felt much better; he was very much purged. The antimony to be discontinued.

5. He passed a good night, and said he is much better this morning; the symptoms connected with the thoracic affection are nearly gone; bowels open seven times during the night, and great thirst; a blister to be applied over the sternum; four grains of calomel to be given three times a-day, and saline medicine every eight hours.

6. Much the same as yesterday; the arm is now swelled, there is a discharge of pus from the orifice of the vein, when pressure is made in the course of the vessel; the purging continues; in the evening he had several shivering fits; the calomel to be discontinued.

7. Had some sleep last night; countenance pale and anxious, he expressed a feeling of great weakness, and was extremely irritable; pulse small, soft, and 140; tongue slightly brown and dry; great thirst, and no appetite.

8. Much as yesterday; a dose of colchicum was taken without any benefit, and three doses of the tincture of hyoscyamus appeared to aggravate the symptoms.

10. Has continued nearly in the same state, with strongly marked restlessness and irritability; countenance pale and sallow; the inflammation of the arm in the course of the vein diminished; but the discharge from the orifice of the vessel more, and mixed with bubbles of air, which seemed to gain admission when the elbow was extended. Respiration was laborious, and 32; a deep inspiration gave no pain; pulse small and 108; thirst continued, the saline medicine continued,

13. Inflammation increased towards the axilla, whilst much diminished at the bend of the arm; he remains low, and very irritable; opium was tried, but without advantage.

18. A soft tumour appeared at the inner side of the insertion of the deltoid muscle without any surrounding inflammation; as fluctuation was perceptible, it was opened, and about two ounces of a thick tenacious, yellow, and very fœtid purulent matter discharged. Fifteen-minim doses of digitalis were given, but without any beneficial effects.

20. Passed a good night, but this morning was very restless and irritable, and complained of pain in the chest, which is increased when he coughs; respiration was clearly heard all over the chest, with the stethoscope, and the heart pulsating over a larger space than natural; pulse small, soft, and 104; bowels open; thirst; no appetite; the tongue had been occasionally rather dry, but never much furred, and frequently clean and moist; the wound in the vein did not discharge any pus, and was healing up.

25. Last night, after taking some cold drink, he was attacked with a severe shivering fit, and during the night, and in the morning, had several more. He appeared very low, and complained much of weakness; his pulse soft, and less frequent; bowels open; cough diminished, but accompanied with copious purulent expectoration; the arm of its natural size; he would not take any medicine.

30. Last night he was delirious, it was necessary to confine him; this morning there was great difficulty in breathing, and the face pale and cadaverous; the irritability extreme: the sonorous breathing was increased at times, so as to threaten suffocation, which was accompanied with a peculiar cry; he soon became exhausted, and remained still for some time, when it was

again repeated; these attacks became more frequent up to the time of his death, at six o'clock on the morning of the 31st.

Dissection of the body six hours after death.

An incision was made from the clavicle to the middle of the fore arm, so as to divide the skin, which was dissected back; a small abscess with a smooth secreting surface was found between the basilic and median basilic veins, and opposite the external wound; both these veins were impervious to blood, and reduced to a chord-like substance; on tracing the basilic vein upwards it was found to lead into an oblong shaped abscess, about two inches above the original wound in the vein; this abscess extended upwards about four inches, and seemed to terminate above in the basilic vein. It had an irregular smooth surface, and the surrounding cellular tissue was very dense. The basilic vein where the abscess terminated above, was lined with an irregular false membrane, for above two inches, where it terminated in a quantity of fibrine, which filled the calibre of the vessel. Immediately above this the cephalic and several smaller veins terminated. The internal surface of the heart and large vessels appeared healthy; the cavæ were filled with coagulated blood. The pericardium contained a few ounces of yellowish serum, mixed with portions of lymph. On the surface of the heart several large white spots appeared. There were extensive adhesions between the pleura costalis and pulmonalis. The lungs appeared healthy, excepting several points where vomicæ had formed; a very large one was situated at the posterior part of the right lobe. The bronchiæ were filled with mucus mixed with air. The abdominal viscera were healthy to all appearance. The arachnoid covering the hemispheres was thickened, opaque, and of a milky appearance. Serous effusion into the texture of the pia-mater was found, and several ounces of yellowish serum in the lateral ventricles; the cerebral substance did not betray any morbid appearance.

DEFINITION OF "SOUND CHIRURGICAL KNOWLEDGE," BY THE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN LONDON,

One of the Court of Examiners, a Member of the Council, one of the Curators, and one of those "Eminent Immortals" who dauntlessly signed the conscientious and scientific Proclamation of 1824.

ALTHOUGH many have endeavoured to understand the above term, as delivered to us by "our pastors* and masters,"—although many clever men have bothered their brains for a definition that would prove alike consonant to common sense and to the credit of those worthies,—although the first surgeons in the metropolis, as evidenced at their meetings in Feb. 1826, endeavoured with all their acumen to detect "this *subtle spirit*," —although the President and Court of Examiners of the Royal Shop, individually and *collectively** strove to convey to the profession, particularly to the young members thereof, the exact nature, *meaning*, and *intention* of the phrase,—still it has been so obscured with a haze of unintelligibility, that we feel not a little *gratified* at being the first to open the eyes of the medical public, and present them with an *open*, *honest*, and STRAIGHT-FORWARD explanation.

The College, by insisting on attendance at metropolitan hospitals as the only legitimate road to sound surgery, *wished* the medical public to believe that they conscientiously considered these institutions, their medical officers, and system of education, infallible, and their practice as the ne plus ultra of scientific acquirement. This is completely proved by their qualifying such a *thing* as Joberns, and disqualifying a man like Hodgson of Birmingham. If the College consider a pupil who has (not?) walked the hospital for 12 months, and *given* to the surgeons thereof 25 guineas, sufficiently qualified for examination, how flattering must be their opinion of the dressers; Gents possessing such constant and ample opportunities of reaping the benefits of "Sound Chirurgical" from the heads of the profession,† or as the *Patent Medicine Venders* say "direct from the *Inventors*."

Mr. ABERNETHY, who is *still* in the habit of coming to the hospital once a week, di-

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* Pastor, a guider of *Sheep*.—Johnson.

* We beg not to be misunderstood; as long as the Charter is permitted to exist, no one can consistently charge the "Royal Mart" with peculation and extortion. They seem to agree with Pope, that "to *enjoy*, is to obey." And being thus commanded by royalty, they have "legal warrant for't." As to mind or morality, who looks for these in the College, when the *President himself*, in either speaking or writing concerning them, invariably gets into a passion, and declares they are quite *immaterial*!

† We once saw a caricature in which a poor wretch was represented *in extremis*. At the side of the bed three large wigs were seen stuck on blocks supported by *sticks*. The hit consisted in the words, "Consultation of the *Heads* of the Profession." This would do us a fitting frontispiece for the first volume of Transactions the College may publish, substituting Transaction for Consultation.

rected his attention on his last visit to a case of fractured ribs. The following dialogue ensued between Mr. A. and the Scion of "Sound Chirurgical" under whose *care* the patient had been left.

Mr. ABERNETHY (approaching the bed, cried out in his usual honied accents), Why the man's breathing with his chest!!

SCION OF S. CHIR. (confidently). He has got on a figure of eight bandage, Sir!!

Mr. ABERNETHY. Can you for one moment suppose that that will confine the movements of the chest? such a contrivance might answer for a fractured clavicle.

SCION OF CHIR. He has only broken the four upper ribs, Sir, (hesitatingly!)

Mr. ABERNETHY. Why, you d—d fool, if you permit the actions of the intercostals, will not the ends of fractured bone be continually grating.

SCION OF CHIR. But the *lower* ribs are *not* broken, Sir, and the fractured upper ones are fixed by the figure of eight bandage!!

Mr. ABERNETHY. A figure of surgical ignorance, you mean.—*Fortunately*, fortunately the man is better. Why really (turning to a host of surrounding students), the dressers have PUDDING for their brains!!

Here we have a clear admission from the President of the College, that Sound Chirurgalism and Fat-headism are synonymous terms.

These are glorious times, as Matthews says, "Who's afraid!" when such people not only rank themselves with the reformers, but for once in their lives, meritoriously cease to act in an *open strait-forward* manner.

INCISED WOUND EXTENDING INTO THE ELBOW JOINT.

Thomas Candon, ætat. 16, a stout healthy looking youth, fell, nine days before admission, and wounded the external side of the elbow joint below the condyles, with a knife. The wound pained but little, and was dressed with adhesive plaster. Considerable inflammation, with discharge of synovia, took place; this continued till he was admitted, Feb. 28. The wound, about an inch long, had everted granulating edges; motion pretty free, though from using the arm there was considerable surrounding inflammation. Leeches, fomentations, and poultices were employed; then the arm placed immoveable in a splint, and the lips of the wound approximated and compressed. The wound healed in eight days from admission, with perfect motion in the joint.

HOSPITAL OF SURGERY.

Panton Square, St. James's.

FUNGUS HÆMATODES OF THE EYE.

A. G., four years of age, residing at Isleworth, was brought to this Hospital with her left eye in a formidable state of disease. The globe of the eye had swollen to such a degree, that with difficulty the upper eyelid could be elevated, so much was it distended. When the eyeball was exposed, it appeared to have become completely altered in its appearance. It had increased to at least twice its natural size; the sclerotic coat was of a dark purple colour, and there were numerous varicose vessels on its surface. The cornea was still transparent; but the iris lay in close contact with it, so that there was scarcely any anterior chamber, and a dark coloured substance appeared behind the pupil. The child was restless, irritable, and considerably emaciated. She fell down stairs nine months ago, soon after which an alteration was perceived in the eye.

Mr. Wardrop told the mother of this unfortunate infant, that he had never known an instance where the removal of the eye ball, in a child with this disease, had been successful, and advised *no operation* to be performed. Mr. Wardrop was informed by Mr. Day, surgeon at Isleworth, under whose care the child was, that it had a convulsive fit three days after returning from the Hospital, and died in a few hours.

MORBID ANATOMY.

Many important pathological facts are admirably illustrated, by examining the diseases of animals; and the following specimen of diseased larynx of a horse, presented by Mr. Goodwin, veterinary surgeon to the King, is peculiarly interesting:—

The horse, from which the larynx was removed, had been for many years driven in one of his Majesty's carriages, and, when in harness, he had been accustomed to have his head placed in an unnatural position. He had become what veterinary surgeons call a "roarer," so named, from a peculiar noise the animal makes in expiration, but which is produced by different causes in different instances. In this case, the whole of the muscles, on one side of the larynx, were found more like thin ligamentous bands than muscles, there being no vestige of the muscular fibre. Whilst, on the other side, these muscles were in a perfectly healthy condition. The arytenoid cartilage, on the diseased side, was very much shrunk; which, along with the wasting of the muscles, preventing the natural ingress and egress of the air during respiration, satisfactorily accounted for the "roaring."